



Municipal Council of Johannesburg.

REPORT of the MEDICAL OFFICER OF HEALTH on the PUBLIC HEALTH and SANITARY CIRCUMSTANCES of JOHAN- NESBURG during the Year, 1st JULY, 1912—30th June, 1913.

TO WHICH IS APPENDED

A REPORT by the MEDICAL ATTENDANT (P. G. STOCK, M.B.,
D.P.H.), on the HEALTH of the NATIVES EMPLOYED BY
THE COUNCIL.

CHARLES PORTER, M.D., D.P.H., *Barrister-at-Law,*
Medical Officer of Health and Hon. Cons. Medical Officer to the Rand Water Board
and to the Rand Central School Board.

JOHANNESBURG,
DECEMBER, 1913.

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REPORT OF THE MEDICAL OFFICER OF
HEALTH OF THE TOWN OF JOHANNESBURG
FOR THE YEAR 1901



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SUMMARY OF STATISTICS

M.O.H. 1912-13

FOR THE

Statistics.

MUNICIPALITY OF JOHANNESBURG.

Latitude.—26 degrees 11 minutes 44 seconds South.

Longitude.—1 hour 52 minutes 10 seconds East.

Altitude.—The population of Johannesburg resides at a mean elevation of 5,850 feet.

Area.—The Area of the Municipality of Johannesburg is 52,330 acres (*vide Government Gazette*, October, 1903): the extreme length, $11\frac{1}{2}$ miles; extreme breadth, $9\frac{1}{2}$ miles; extent of perimeter, $41\frac{1}{2}$ miles.

Houses.—At the Census in May, 1911, there were within this area 27,285 occupied houses. There were also 1,074 unoccupied houses and 412 in course of erection.

Annual Rateable Value.—The annual rateable value of property within the Municipality of Johannesburg, as assessed in accordance with Ordinance 43 of 1903, and representing “the full and fair price or sum which the same “would realise if brought at the time of valuation to voluntary sale,” was in 1912-13, £32,689,622.

The Town Council can impose a rate not exceeding 3d. in the £. The rate for 1912-13 was $2\frac{1}{2}$ d. in the £. Rate produced £240,516 17s. 11d.

POPULATION—YEAR 1912-13.

YEAR,	Whites,	Natives,	Eurafricans,	Asiatics,	Total Persons.
1911-12 Government Census (May 7th, 1911) ...	129,601	104,974	14,300		248,875
Estimated for 1912-13 ...	134,000	104,974	14,300		253,274

	1909-10,	1910-11,	1911-12,	1912-13,
MARRIAGES ...	1,364	1,634	1,632	1,553
PERSONS MARRIED ...	2,728	3,268	3,264	3,106
MARRIAGE RATE per 1,000 population (white) ...	24·38	29·21	25·1	23·17
BIRTHS (white) ...	3,789	3,996	4,361	4,310
BIRTH-RATE per 1,000 population (white)	33·8	35·7	33·6	32·16

DEATH-RATES,	Whites,		Natives,	Eurafricans,	Asiatics,	All Persons.
	Crude.	*Corrected for Age and Sex distrib.				
1903-4 ...	17·2	—	32·4		19·5	23·9
1904-5 ...	16·1	21·12	29·3		7·3	20·8
1905-6 ...	18·4	24·3	32·4		11·3	22·9
1906-7 ...	14·0	—	28·6		24·4	20·8
1907-8 ...	13·8	—	29·3		24·1	21·0
1908-9 ...	15·1	—	31·3		14·7	22·1
1909-10 ...	12·5	12·9972	24·5	25·2	18·5	18·3
1910-11 ...	14·4	15·2976	33·6	31·1	19·7	23·4
1911-12 ...	12·5	13·3423	25·5	24·4		18·2
1912-13 ...	11·30	12·10	27·63	23·21		18·68

* Factor for correction 1·1502.

(NORMAN ANSTEY, Esq.).

MR. MAYOR,—I have the honour to submit my REPORT FOR THE OFFICIAL YEAR, 1912-13. Its GENERAL ARRANGEMENT follows that adopted on previous occasions.

At page 7 is a new Table, kindly supplied by the Director of the Census, showing FOR EACH OF THE DISTRICTS OF JOHANNESBURG details as regards NUMBER AND DENSITY OF THE WHITE AND OF THE COLOURED POPULATION.

At page 11 the CHIEF FACTORS OF THE YEAR'S MORTALITY are indicated and compared with those of 1911-12.

At page 17 the INCREASED PREVALENCE AND CASE-MORTALITY FROM ENTERIC FEVER is discussed.

At pages 21-22 the MARKED PREVALENCE OF ACUTE RHEUMATISM in Johannesburg is considered.

At pages 23-24 are recorded the particulars of a SERIOUS OUTBREAK OF SMALLPOX in July-August, 1912, and some interesting particulars about SECOND OCCURRENCES OF SMALLPOX IN THE SAME PERSON.

At pages 30-32 certain instructive results of the third year's working of your fine PUBLIC ABATTOIR are excerpted from the Report of the Director (Mr. J. Irvine Smith, M.R.C.V.S.).

Between January and June, 1913, Dr. Pratt Johnson (Acting Assistant Medical Officer of Health) prepared, under the supervision of the Medical Officer of Health, a very able detailed "REPORT ON THE CONDITIONS OF MILK PRODUCTION IN AND AROUND JOHANNESBURG," which is summarised at pages 32-34. The main feature of the year's work was an earnest attempt (based upon this Report) to improve the conditions of Milk Supply, which met with but partial success and questionable appreciation.

At page 35 the practical STERILIZATION OF MILK is dealt with.

A systematic INSPECTION OF PRINTING WORKS, with particular regard to special ventilation in connection with type-casting process, is referred to at page 40.

The present position of our local PROBLEM OF SLUM PROPERTY is stated at pages 41-42.

At page 52 is printed a Code of Recommendations in regard to SURFACE SANITATION ON MINES, and at page 56 is reproduced an Address by the Medical Officer of Health on "THE DUTIES, QUALIFICATIONS AND DIFFICULTIES OF SANITARY INSPECTORS," a subject in regard to which there is little general knowledge and much misconception.

ACKNOWLEDGMENTS.—It is a duty and great pleasure to record once again my continued indebtedness to the Government Analyst (Dr. John McCrae, Ph.D.) and the Director of the South African Institute for Medical Research (Dr. W. Watkins Pitchford, M.D.Lond., F.R.C.S.Eng.) for ever ready and valuable technical advice. During the year each of these gentlemen was formally appointed a "Municipal Analyst."

For the greater part of the period under review, Dr. P. G. Stock (Assistant Medical Officer of Health), who has been my able colleague during the past ten years, was absent on leave, or lent to Government, with whom he has now accepted the dual post of Assistant Medical Officer of Health for Union and Staff Officer for Medical Department of the Defence Force. Dr. Stock has served the Council faithfully and well, and I much regret the severance of a long and, to me, entirely pleasant relationship.

Dr. Pratt Johnson (M.B.Lond., D.P.H.Oxon) acted as Assistant Medical Officer of Health from September, 1912, to August, 1913, with much ability and acceptance.

I have also to thank the members of my very competent Staff for their excellent and willing work, and especially for their successful efforts during the smallpox outbreak of July-August, 1912.

Once again I wish to record my deep appreciation of the continued and kindly co-operation of my colleagues, the Heads and Sub-Heads of Departments, which, I venture to think, is a very notable feature of your Service.

I have the honour to be, Mr. Mayor,

Your obedient servant,

CHARLES PORTER,

Medical Officer of Health.

29th December, 1913.



REPORT

OF

MEDICAL OFFICER OF HEALTH

For Period from 1st July, 1912, to 30th June, 1913.

DENSITY OF POPULATION.

The Council is particularly indebted to the courtesy of the Director of the Census (J. B. Moffatt, Esq.) for specially preparing and supplying the appended table:—

Return showing, for the Municipal Districts of Johannesburg, the Population (all races, European or White, and other than European or White), and the Density of the Population, according to the Census taken on 7th May, 1911.

Municipal District No.	Area in Acres.	POPULATION.			Number of Persons per Acre.		
		All Races.	European or White.	Other than European or White.	All Races.	European or White.	Other than European or White.
See foot of Table A. opposite p. 9.	1	314'132	16,365	11,850	4,515	52'096	37'723
	2	352'42	13,581	11,057	2,524	38'536	31'374
	3	312'33	13,912	8,567	5,345	44'542	27'429
	4	596'55	14,907	9,616	5,291	24'988	16'119
	5	287'316	17,190	9,230	7,960	59'830	32'125
	6	1,139'67	13,155	11,164	1,991	11'543	9'796
	7	3,062'44	23,968	17,869	6,099	7'826	5'835
	8	8,309'248	11,358	8,445	2,913	1'367	1'016
	9	10,725'86	13,125	8,410	4,715	1'224	0'784
	10	6,025'11	33,889	4,119	29,470	5'624	0'733
	11	1,132'98	18,201	2,338	15,863	16'065	2'064
	12	2,090'53	28,973	4,042	24,931	13'859	1'933
	13	5,225'76	16,533	12,937	3,596	3'164	2'476
Klipspruit	2,642'00	1,947	9	1,938	0'737	0'003	0'734

MARRIAGES.

From 1st July, 1912, to 30th June, 1913, the number of white marriages registered was 1,553, equal to a marriage rate of 23·9 per 1,000. The rate per 1,000 in "London" was 18·6 in 1912, and 17·8 in 1911.*

During the same period 178 coloured marriages were registered.

BIRTHS.

From 1st July, 1912, to 30th June, 1913, the number of white births registered was 4,310.

The white birth-rate was high, being equal to 32·16 per 1,000 for 1912-13. For "The 95 Great Towns" of England and Wales, in 1912 the birth-rate was 24·8.

* Vide Registrar-General's Annual Summary for 1912.

M.O.H. 1912-13

Deaths.
Infantile
Mortality.

During the same period 928 native and coloured births were registered, but as adult native and coloured females number only 6,364 against 90,469 adult coloured males, it would merely mislead to strike a birth-rate.

Illegitimate Births.—These numbered 131 for the year 1912-13, and during this period constituted 3·03 per cent. of all births, as against 3·8 in London in 1912.

In the consideration of vital statistics, a correct appreciation of the influence of birth-rate upon death-rate is essential. In large towns, “high death-rates go with high birth-rates. High death-rates, however, are not the result of high birth-rates—they are more generally caused by bad sanitary conditions. Populations having a continuously high birth-rate should (sanitary conditions being equal) have lower death-rates than populations having low birth-rates; for if, year by year, the births exceed the deaths amongst a population, not only are additional children under 5 years of age, whose mortality is high, added to the population, but a still larger increase of those between 10 and 40, whose mortality is low, takes place, and counterbalances the other: whilst the proportion of old people over 55 to the total population is diminished. Conversely, a continuously low birth-rate means a small proportion of young adults and a large proportion of old people, and is therefore unfavourable to a low death-rate.”—(*Newsholme.*)

DEATHS.

The deaths herein referred to are those of persons who died within the extended Municipal Area as defined by Proclamations 13 of 1902 and 46 of 1903.

RACE.	DEATHS.		DEATH-RATE per 1,000.		
	Total.	Of Non-Residents.	Gross Recorded.	Excluding Non-Residents.	Corrected for age and sex Distribution.
1912 to 1913 :					
Whites ...	1,515	104	11·30	10·52	12·10
Natives ...	2,988	81	28·46	27·63	
Eurafricans ...	244	15	24·47 {	23·21 {	
Asiatics ...	106	3			
All Persons ...	4,853	203	19·49	18·68	

In order to neutralise the errors in comparison of death-rates arising from variations in sex and age constitution of the population of different towns, the Registrar-General of England and Wales has calculated a series of “factors” by which the recorded death-rates of the “Great Towns” can be multiplied, so as to make them correctly comparable. Dr. G. D. Maynard, Census Supervisor, 1910, kindly worked out similar “factors for correction” for the white population of Johannesburg. They were as follows: For Males, 1·1806; Females, 1·1552; Persons, 1·1502 (*vide Census Report, 1910, Table IX.*)

INFANTILE MORTALITY, *i.e.*, deaths of infants under 1 year per each 1,000 births registered:—

In 1909-10: For Whites, 117; for Natives and Euraficans, 369; for Asiatics, 252.

In 1910-11: For Whites, 110; for Natives and Euraficans, 326; for Asiatics, 295.

In 1911-12: For Whites, 114; for Natives and Euraficans, 361; for Asiatics, 194.

In 1912-13: For Whites, 99·53; for Natives and Euraficans, 296·43; for Asiatics, 246·47.



TABLE D.

Return of Deaths among the Asiatic Population for the 12 Months ending 30th June, 1913.

No.	CAUSES OF DEATH.	All Ages.	Under 1 year.	1—5 years.	5—15 years.	15—25 years.	25—35 years.	35—45 years.	45—65 years.	65 and upwards.	NUMBER OF DISTRICT.													Hos- pital.	Non- Resi- dent.	Un- known	Total.
											I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XII.	XIII.				
1	Smallpox .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	Measles	1	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1
3	Scarlet Fever	1	...	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1
4	Epidemic Influenza .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	Whooping Cough .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	Diphtheria .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	Membranous Croup .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	Enteric Fever .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	Cholera .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	Plague .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	Diarrhœa and Dysentery	16	8	3	...	...	3	1	1	...	3	...	1	...	8	...	1	...	1	...	...	...	1	...	1	...	16
12	Epidemic Zymotic Enteritis .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13	Enteritis	2	1	...	...	1	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	2
14	Other continued Fevers .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	Erysipelas .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	Puerperal Fever	1	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1
17	Other Septic Diseases	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1
18	Acute Rheumatism or Fever	1	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1
19	Intermittent Fever .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	Malarial Cachexia .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	Tuberculosis of Meninges .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	Tuberculosis of Lungs	7	1	...	1	1	...	4	...	...	...	1	1	1	3	...	...	...	1	...	...	...	...	...	...	...	7
23	Other forms of Tuberculosis	2	...	...	...	...	1	1	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	2
24	Alcoholism .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	Cancer	3	...	...	...	...	...	2	1	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	3
26	Premature Birth	3	3	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	...	...	...	...	...	...	...	...	3
27	Developmental Diseases	10	10	...	...	...	...	...	...	...	...	...	...	...	7	1	1	...	1	...	...	...	...	...	...	...	10
28	Old Age	2	...	...	...	...	...	...	...	2	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	2
29	Meeningitis	2	...	...	1	...	...	1	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	2
30	Other Diseases of Nervous System	2	...	...	...	1	...	...	1	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	2
31	Organic Diseases of Heart	11	1	...	1	2	1	2	3	1	1	...	1	...	8	...	...	...	...	...	1	...	...	...	...	...	11
32	Acute Bronchitis	10	5	2	...	...	...	1	2	...	...	...	...	...	8	...	...	...	1	1	...	...	...	...	...	...	10
33	Chronic Bronchitis	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1
34	Pneumonia, Lobar or Croupous	15	4	4	...	1	1	2	2	1	1	...	3	...	7	...	3	1	...	...	...	...	...	...	...	...	15
35	Pneumonia, Broncho or Catarrhal	2	1	1	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	2
36	Rockdrill ditto, or Miners' Phthisis .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
37	Diseases of Stomach	1	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1
38	Obstruction of Intestines .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
39	Cirrhosis of Liver	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1
40	Nephritis or Bright's Disease	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1
41	Scurvy .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
42	Syphilis	2	...	...	...	...	1	1	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	2
43	Tumours, etc., Affections of Female Genital Organs .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
44	Diseases of Parturition .....	...	...	...	...	...	...	1	2	...	1	...	...	...	3	...	...	...	1	...	...	...	...	...	...	...	...
45	Accident or Negligence	5	...	...	1	...	1	1	2	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	5
46	Suicide or Murder	2	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	2
47	All other causes	2	...	...	...	...	...	2	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	2
TOTALS		106	35	11	5	7	10	21	13	4	11	2	9	2	58	1	5	2	5	2	1	3	1	1	3	...	106

DISTRICT No. 1 includes that portion of Johannesburg (farm Randjeslaagte) south of the Railway and north of Commissioner Street.
DISTRICT No. 2 includes Braamfontein, Hospital Hill and Hillbrow.
DISTRICT No. 3 includes Marshalls Town and City and Suburban.
DISTRICT No. 4 includes Ferreiras, Fordsburg and Mayfair.
DISTRICT No. 5 includes Newtown, Vrededorp, the Cemetery and the Locations.
DISTRICT No. 6 includes Jeppes, Jeppes Extension, Belgravia, etc.
DISTRICT No. 7 includes Doornfontein, New Doornfontein, Bertrams, Lorentzville, Judith Paarl, Troyeville, Kensington Estate, Bezuidenhout Valley Township and Fairview.

DISTRICT No. 8 includes Berea, Yeoville, Bellevue, Bellevue East, and North-Eastern suburban portion.
DISTRICT No. 9 includes Auckland Park, Richmond, Melville, Newlands, New Clare and North-Western suburban portion.
DISTRICT No. 10 includes Paarl's Hoop and Mines from Robinson westwards to boundary.
DISTRICT No. 11 includes Central Mines (from Ferreira to City and Suburban).
DISTRICT No. 12 includes Prospect Town, Denver and the Mines from Meyer and Charlton to Eastern boundary.
DISTRICT No. 13 includes Ophirton, Booyens, Turfontein, Rosettenville, etc. (Southern suburban portion).

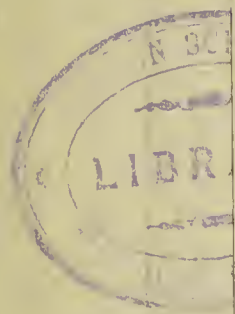


TABLE C.

Return of Deaths among the Eurafrican Population for the 12 months ending 30th June, 1913.

No.	CAUSES OF DEATH.	All Ages.	Under 1 year.	1—5 years.	5—15 years.	15—25 years.	25—35 years.	35—45 years.	45—65 years.	65 and upwards.	NUMBER OF DISTRICT.													Hos-pital.	Non-Resi-dent.	Un-known	Total
											I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XII.	XIII.				
1	Smallpox .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	Measles	7	1	6	...	...	...	...	...	...	...	...	...	1	3	1	1	...	...	1	...	...	...	...	...	...	7
3	Scarlet Fever .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	Epidemic Influenza	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1
5	Whooping Cough	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1
6	Diphtheria	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	1
7	Membranous Croup	2	1	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	2
8	Enteric Fever	3	...	...	...	...	1	1	1	...	...	...	...	2	...	...	...	...	...	1	...	...	...	...	...	...	3
9	Cholera .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	Plague .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	Diarrhœa and Dysentery	33	21	10	...	1	1	...	...	...	...	1	5	2	12	3	2	2	...	3	...	...	3	...	...	...	33
12	Epidemic Zymotic Enteritis .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13	Enteritis	4	2	2	...	...	...	...	...	...	...	...	1	...	...	1	1	...	...	...	...	1	...	...	...	...	4
14	Other continued Fevers	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	1
15	Erysipelas .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	Puerperal Fever	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1
17	Other Septic Diseases .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	Acute Rheumatism or Fever	1	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1
19	Intermittent Fever .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	Malarial Cachexia .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	Tuberculosis of Meninges .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	Tuberculosis of Lungs	27	2	2	...	5	5	9	4	...	1	1	...	1	7	2	4	1	1	...	...	2	4	...	3	...	27
23	Other forms of Tuberculosis	1	...	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1
24	Alcoholism .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	Cancer	4	...	...	...	...	...	1	2	1	...	...	1	1	...	...	...	...	...	...	...	1	...	...	1	...	4
26	Premature Birth	9	9	...	...	...	...	...	...	...	...	...	1	1	4	...	2	...	...	...	...	...	...	...	1	...	9
27	Developmental Diseases	22	19	3	...	...	...	...	...	...	2	...	5	1	7	1	1	...	2	1	...	...	2	...	...	...	22
28	Old Age	4	...	...	...	...	...	...	...	4	1	...	...	1	...	...	...	...	1	...	...	...	1	...	...	...	4
29	Meningitis	7	5	2	...	...	...	...	...	...	...	...	2	1	...	...	3	...	...	...	...	1	...	...	...	1	7
30	Other Diseases of Nervous System	3	...	1	...	...	2	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	1	3
31	Organic Diseases of Heart	19	...	...	1	2	1	4	8	3	1	1	3	...	4	1	3	...	3	...	...	...	1	...	2	...	19
32	Acute Bronchitis	13	9	...	...	...	2	1	1	...	...	1	2	...	8	...	...	...	1	...	...	...	1	...	...	...	13
33	Chronic Bronchitis	8	...	...	...	...	2	...	2	4	...	...	2	...	2	...	...	...	...	1	...	...	...	...	2	1	8
34	Pneumonia, Lobar or Croupous	30	6	7	2	4	6	1	3	1	...	3	2	...	16	1	1	1	...	1	1	3	...	...	1	...	30
35	Pneumonia, Broncho or Catarrhal	14	8	4	...	...	...	1	1	...	2	...	2	1	4	...	...	2	...	1	...	...	3	...	...	...	14
36	Rockdrill ditto, or Miners' Phthisis	2	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	1	...	...	1	...	...	...	2
37	Diseases of Stomach	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1
38	Obstruction of Intestines .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
39	Cirrhosis of Liver .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
40	Nephritis or Bright's Disease	4	...	1	...	2	...	...	1	...	...	...	1	...	...	...	1	...	...	1	...	...	...	...	1	...	4
41	Scurvy .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
42	Syphilis	3	3	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	1	...	...	...	3
43	Tumours, etc., Affections of Female Genital Organs	2	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	2
44	Diseases of Parturition	1	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1
45	Accident or Negligence	3	1	...	1	...	...	1	...	...	...	...	1	...	...	...	1	...	...	1	...	...	...	...	...	...	3
46	Suicide or Murder	1	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1
47	All other causes	11	3	...	...	2	1	2	3	...	2	1	2	...	2	...	1	...	...	1	...	...	1	...	1	...	11
TOTALS		244	92	42	6	18	23	21	29	13	9	8	31	9	78	11	22	6	9	12	2	7	23	...	15	2	244

DISTRICT No. 1 includes that portion of Johannesburg (farm Randjeslaagte) south of the Railway and north of Commissioner Street.
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Journal of the

Date	Place	Remarks	Temperature	Wind	Weather
Jan 1	New York	Left New York	32	S	Clear
Jan 2	New York	Arrived New York	30	S	Clear
Jan 3	New York	Left New York	30	S	Clear
Jan 4	New York	Arrived New York	30	S	Clear
Jan 5	New York	Left New York	30	S	Clear
Jan 6	New York	Arrived New York	30	S	Clear
Jan 7	New York	Left New York	30	S	Clear
Jan 8	New York	Arrived New York	30	S	Clear
Jan 9	New York	Left New York	30	S	Clear
Jan 10	New York	Arrived New York	30	S	Clear
Jan 11	New York	Left New York	30	S	Clear
Jan 12	New York	Arrived New York	30	S	Clear
Jan 13	New York	Left New York	30	S	Clear
Jan 14	New York	Arrived New York	30	S	Clear
Jan 15	New York	Left New York	30	S	Clear
Jan 16	New York	Arrived New York	30	S	Clear
Jan 17	New York	Left New York	30	S	Clear
Jan 18	New York	Arrived New York	30	S	Clear
Jan 19	New York	Left New York	30	S	Clear
Jan 20	New York	Arrived New York	30	S	Clear
Jan 21	New York	Left New York	30	S	Clear
Jan 22	New York	Arrived New York	30	S	Clear
Jan 23	New York	Left New York	30	S	Clear
Jan 24	New York	Arrived New York	30	S	Clear
Jan 25	New York	Left New York	30	S	Clear
Jan 26	New York	Arrived New York	30	S	Clear
Jan 27	New York	Left New York	30	S	Clear
Jan 28	New York	Arrived New York	30	S	Clear
Jan 29	New York	Left New York	30	S	Clear
Jan 30	New York	Arrived New York	30	S	Clear
Jan 31	New York	Left New York	30	S	Clear

TABLE B.

Return of Deaths among the Native Population for the 12 Months ending 30th June, 1913.

No.	CAUSES OF DEATH.	All Ages.	Under 1 year.	1—5 years.	5—15 years.	15—25 years.	25—35 years.	35—45 years.	45—65 years.	65 and up- wards.	NUMBER OF DISTRICT.													Hos- pital.	Non- Resi- dent.	Un- known	Total.
											I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XII.	XIII.				
1	Smallpox .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	Measles	64	1	...	...	18	43	1	1	...	...	...	...	...	...	...	1	...	...	1	...	2	60	...	...	...	64
3	Scarlet Fever .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	Epidemic Influenza .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	Whooping Cough	2	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	2
6	Diphtheria	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1
7	Membranous Croup.....	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
8	Enteric Fever	80	...	...	1	44	26	8	...	1	2	7	...	3	5	1	...	2	...	31	13	9	3	...	4	...	80
9	Cholera .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	Plague .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	Diarrhœa and Dysentery	165	36	10	2	34	61	16	6	...	3	2	1	...	6	...	5	...	3	24	10	31	77	...	3	...	165
12	Epidemic Zymotic Enteritis .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13	Enteritis	7	2	3	...	1	1	...	...	...	1	1	...	...	...	...	...	...	...	1	...	1	2	...	1	...	7
14	Other continued Fevers .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	Erysipelas	4	...	...	...	2	1	1	...	...	...	...	...	...	...	...	...	...	...	2	1	...	1	...	...	...	4
16	Puerperal Fever	1	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1
17	Other Septic Diseases	5	...	...	...	3	2	...	...	...	...	...	...	...	...	...	...	...	...	5	...	...	...	...	...	...	5
18	Acute Rheumatism or Fever.....	15	...	...	...	5	4	6	...	...	...	...	...	...	...	...	1	1	...	1	2	10	...	...	...	...	15
19	Intermittent Fever.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	Malarial Cachexia	10	...	...	...	5	2	3	...	...	...	...	...	...	...	...	...	...	...	2	1	2	5	...	...	...	10
21	Tuberculosis of Meninges	2	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	2
22	Tuberculosis of Lungs	374	2	7	6	84	152	96	27	...	12	5	8	18	5	2	9	1	5	160	60	48	30	1	10	...	374
23	Other forms of Tuberculosis	65	2	4	1	18	26	11	3	...	...	1	2	4	...	...	1	...	...	19	7	8	18	...	5	...	65
24	Alcoholism .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	Cancer	5	...	...	...	1	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	3	2	...	...	...	5
26	Premature Birth	20	20	...	...	...	...	...	...	...	1	2	...	1	1	1	2	...	1	3	...	2	5	...	1	...	20
27	Developmental Diseases	34	29	5	...	...	...	...	...	...	1	3	1	3	3	...	3	1	1	2	...	1	10	...	5	...	34
28	Old Age	2	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	2
29	Meningitis	225	4	...	1	95	105	16	4	...	1	...	1	1	1	...	1	...	1	48	25	30	114	...	2	...	225
30	Other Diseases of Nervous System ...	24	...	...	...	3	13	5	3	...	...	2	4	1	...	...	...	...	...	6	1	7	3	...	...	...	24
31	Organic Diseases of Heart	67	...	...	1	13	31	13	8	1	2	2	2	4	3	...	1	...	1	18	8	16	7	1	2	...	67
32	Acute Bronchitis	30	11	4	3	9	3	...	...	...	...	...	1	...	2	...	...	...	4	3	...	3	16	...	1	...	30
33	Chronic Bronchitis	9	...	1	...	1	4	1	1	1	1	...	2	...	...	...	...	...	...	...	1	3	2	...	...	...	9
34	Pneumonia, Lobar or Croupous	1155	22	7	2	369	527	184	42	2	7	10	6	6	16	4	13	3	5	296	219	220	327	1	22	...	1155
35	Pneumonia, Broncho or Catarrhal...	41	7	9	...	12	10	2	1	...	1	1	1	1	...	1	1	...	4	6	5	2	15	1	2	...	41
36	Rockdrill ditto, or Miners' Phthisis	88	...	...	...	5	29	42	12	...	1	...	...	1	1	...	...	...	...	28	15	22	19	...	1	...	88
37	Diseases of Stomach	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1
38	Obstruction of Intestines	3	...	...	...	...	1	2	...	...	...	...	1	...	...	...	...	...	...	...	1	1	...	...	...	...	3
39	Cirrhosis of Liver	28	...	...	...	4	14	7	3	...	...	1	...	1	...	...	...	...	...	2	8	5	11	...	...	...	28
40	Nephritis or Bright's Disease	26	1	2	1	4	8	7	3	...	2	...	3	...	...	...	...	...	...	6	2	2	7	...	4	...	26
41	Scurvy	3	...	...	...	3	18	9	3	...	...	...	...	2	1	...	...	...	...	20	1	4	4	...	1	...	33
42	Syphilis	4	...	...	2	1	1	...	...	...	2	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	4
43	Tumours, etc., Affections of Female Genital Organs	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	1
44	Diseases of Parturition.....	2	...	...	...	...	1	...	1	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	2
45	Accident or Negligence	262	1	4	2	38	166	45	6	...	1	3	...	3	...	1	...	1	1	103	77	56	7	...	9	...	262
46	Suicide or Murder	25	...	...	...	2	15	8	...	...	...	...	1	2	1	...	...	...	...	3	5	5	1	...	5	...	25
47	All other causes	107	2	2	3	26	55	13	3	1	3	2	1	3	1	1	6	1	1	28	11	9	36	1	3	...	107
TOTALS		2,988	141	60	26	801	1,324	501	127	8	42	43	36	54	47	11	44	10	29	819	475	504	787	6	81	...	2,988

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TABLE A.

Return of Deaths among the White Population for the 12 Months ending 30th June, 1913.

No.	CAUSES OF DEATH.	All Ages.	Under 1 year.	1—5 years.	5—15 years.	15—25 years.	25—35 years.	35—45 years.	45—65 years.	65 and upwards.	NUMBER OF DISTRICT.													Hos-pital.	Non-Resi-dent.	Un-known	Total.
											I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XII.	XIII.				
1	Smallpox .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	Measles	44	11	25	7	1	...	...	...	...	1	5	...	6	7	4	4	1	1	6	...	4	4	...	1	...	44
3	Scarlet Fever	17	...	8	9	...	...	...	...	...	...	1	1	...	1	3	4	...	...	...	...	7	...	...	...	...	17
4	Epidemic Influenza	13	1	...	...	3	3	2	4	...	...	1	...	2	...	2	1	2	1	1	...	2	...	...	...	...	13
5	Whooping Cough	3	1	2	...	...	...	...	...	...	...	...	1	...	...	...	1	...	1	...	...	...	...	...	...	...	3
6	Diphtheria	13	2	6	4	1	...	...	...	...	1	...	...	...	2	...	2	...	3	1	...	...	4	...	...	...	13
7	Membranous Croup	10	1	8	1	...	...	...	...	...	...	1	...	1	1	1	...	...	5	...	...	...	...	...	1	...	10
8	Enteric Fever	52	2	5	7	9	12	9	7	1	9	4	2	6	3	7	5	7	3	2	1	1	...	...	2	...	52
9	Cholera .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	Plague .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	Diarrhoea and Dysentery	191	136	38	...	2	4	4	7	...	11	9	4	28	37	6	12	7	24	6	3	7	25	...	11	1	191
12	Epidemic Zymotic Enteritis .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
13	Enteritis	16	9	6	...	...	...	...	1	...	2	...	3	2	...	...	...	1	2	2	...	1	3	...	...	...	16
14	Other continued Fevers .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	Erysipelas	5	2	2	...	...	...	1	...	...	1	...	1	...	...	1	...	...	1	...	...	1	...	...	...	...	5
16	Puerperal Fever	10	...	...	...	1	6	2	1	...	1	1	...	1	...	1	1	...	...	...	1	...	2	...	2	...	10
17	Other Septic Diseases	6	1	1	2	...	1	...	1	...	...	2	...	...	...	...	1	2	...	1	...	...	...	...	...	...	6
18	Acute Rheumatism or Fever	11	...	1	5	2	...	2	1	...	...	...	1	1	2	1	...	1	2	1	...	...	1	...	1	...	11
19	Intermittent Fever .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	Malarial Cachexia .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	Tuberculosis of Meninges	3	3	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	1	...	3
22	Tuberculosis of Lungs	52	3	...	...	7	12	17	12	1	6	6	4	8	...	2	7	4	4	2	...	...	6	...	3	...	52
23	Other forms of Tuberculosis	9	1	2	1	1	1	...	3	...	...	...	...	...	...	...	1	1	1	2	2	...	2	...	...	...	9
24	Alcoholism	10	...	...	...	...	3	4	3	...	4	...	3	...	...	...	2	...	...	...	...	...	...	...	...	...	10
25	Cancer	62	...	...	1	1	6	6	33	15	8	5	4	4	8	2	6	3	3	3	...	2	6	...	8	...	62
26	Premature Birth	74	74	...	...	...	...	...	...	...	8	16	6	4	4	7	7	1	4	2	1	4	9	...	1	...	74
27	Developmental Diseases	112	99	13	...	...	...	...	...	...	8	16	10	8	7	9	13	8	7	4	1	5	11	...	5	...	112
28	Old Age	27	...	...	...	...	...	...	2	25	3	...	1	2	6	2	1	5	4	...	...	2	...	...	1	...	27
29	Meningitis	28	12	8	5	...	...	1	2	...	2	2	2	1	...	4	6	3	1	1	...	2	2	...	2	...	28
30	Other Diseases of Nervous System	41	...	1	3	1	...	9	16	11	3	3	5	4	2	3	5	2	1	...	...	4	4	...	4	...	41
31	Organic Diseases of Heart	140	8	4	8	8	12	25	51	24	8	19	7	8	5	8	21	10	14	1	1	2	19	...	17	...	140
32	Acute Bronchitis	22	8	10	1	2	1	...	...	...	...	...	4	4	5	2	...	2	...	...	...	...	4	...	1	...	22
33	Chronic Bronchitis	31	1	...	...	...	...	4	11	15	4	1	...	2	3	6	6	2	1	...	...	3	2	...	...	1	31
34	Pneumonia, Lobar or Croupous	125	21	11	4	7	10	33	36	3	19	9	18	8	8	10	18	4	9	8	1	4	6	...	3	...	125
35	Pneumonia, Broncho or Catarrhal	40	22	13	...	1	1	...	3	...	2	4	2	4	8	2	5	5	4	...	...	1	2	...	1	...	40
36	Rockdrill ditto, or Miners' Phthisis	74	...	...	...	1	12	37	23	1	5	...	2	10	3	21	4	...	2	1	7	8	8	...	3	...	74
37	Diseases of Stomach	12	1	...	...	...	1	3	5	2	1	2	...	1	...	2	1	1	...	...	...	...	2	...	2	...	12
38	Obstruction of Intestines	9	1	1	...	...	...	4	1	2	1	2	...	1	...	1	...	...	1	1	...	...	1	...	1	...	9
39	Cirrhosis of Liver	13	...	...	...	...	...	5	7	1	1	2	3	1	...	...	1	1	1	...	...	...	1	...	2	...	13
40	Nephritis or Bright's Disease	50	2	2	2	5	4	8	19	8	8	1	1	4	2	6	8	3	3	3	2	1	2	...	6	...	50
41	Scurvy .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
42	Syphilis	1	...	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1
43	Tumours, etc., Affections of Female Genital Organs	7	...	...	...	...	4	2	...	1	...	...	...	...	1	3	3	...	...	...	...	...	...	...	...	...	7
44	Diseases of Parturition	12	...	...	...	3	6	3	...	...	1	...	...	2	...	...	2	...	4	...	...	...	1	...	2	...	12
45	Accident or Negligence	63	3	9	3	7	13	21	6	1	3	5	6	2	2	9	7	2	3	6	5	1	4	...	8	...	63
46	Suicide or Murder	39	...	...	...	6	8	12	12	1	11	3	3	2	3	2	5	...	1	1	1	1	4	...	2	...	39
47	All other causes	68	4	3	2	4	14	16	18	7	10	3	5	5	2	4	8	7	4	...	4	1	3	...	12	...	68
TOTALS		1,515	429	179	65	73	135	229	286	119	142	123	100	133	122	131	167	86	114	56	32	52	150	1	104	2	1,515

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DEATH-RATE IN BRITISH, COLONIAL AND FOREIGN CITIES.—Appended, for M.O.H. 1912-13 purposes of comparison, are particulars as to the “Death-Rate per 1,000 from All Causes” in large cities in other parts of the world:—

	1912.		1912.
Greater London (<i>i.e.</i> , Metropolitan and City Police Districts) ...	13·6	Rome	14·0
“95 Great Towns” of England and Wales	13·8	St. Petersburg	21·9
Edinburgh	15·7	Moscow	24·3
Glasgow	17·6	Cairo	40·2
Dublin	20·5	Alexandria	35·8
Calcutta (including plague deaths)	28·1	Durban	8·8 (1912-13)
Bombay (including plague deaths)	39·8	Capetown	—
Madras	38·7	New York	14·1
Sydney	11·4	New Orleans	18·9
Brisbane	13·1	Buenos Ayres	16·6
Paris	16·3	JOHANNESBURG—	
Berlin	14·4	Whites	10·5 (1912-3)
Trieste	21·1	Natives	27·6 („)
Vienna	15·4	Coloured and Asiatics ...	23·2 („)
		All Persons	18·68 („)

Except in regard to Durban and Capetown, these figures are taken from the Annual Summary of the Registrar-General for England and Wales, 1912.

CAUSES OF DEATH.

The causes of, and ages at death, and the local distribution appear separately for 1912-13 in the inset Tables A to D for “Whites,” “Natives,” “Eurafricans” and “Asiatics” respectively.

The classification followed in this Report is that adopted in the “Schedule of Causes of Death” issued by the Local Government Board of England. In future Reports the “International Classification” (Paris, 1909) will be adopted.

M.O.H. 1912-13

FACTORS OF MORTALITY, 1912-13.

Deaths.			July, 1910, to June, 1911.		July, 1911, to June, 1912.		July, 1912, to June, 1913.	
			Deaths.	Death- Rate.	Deaths.	Death- Rate.	Deaths.	Death- Rate.
Diarrhœal Diseases ...	W.		177	1·58	226	1·7	196	1·46
	N.		168	1·7	200	1·9	168	1·60
	E.		40	5·1	37 }	3·07	37 }	3·77
	A.		16	3·08	6 }		17 }	
Pneumonia ...	W.		168	1·5	162	1·2	161	1·20
	N.		1,169	12·2	904	8·6	1,133	10·79
	E.		43	5·5	43 }	3·77	29 }	3·07
	A.		11	2·1	11 }		15 }	
Developmental Diseases *	W.		127	1·13	119	0·91	107	0·79
	N.		34	0·35	27	0·25	29	0·27
	E.		30	3·8	26 }	2·7	22 }	2·33
	A.		9	1·7	13 }		10 }	
Tuberculosis ...	W.		79	0·7	58	0·4	49	0·36
	N.		368	3·8	395	3·7	364	3·46
	E.		17	2·1	34 }	2·7	24 }	2·16
	A.		6	1·1	6 }		7 }	
Heart Disease ..	W.		145	1·2	141	1·0	123	0·91
	N.		73	0·7	76	0·7	65	0·61
	E.		15	1·9	14 }	1·2	17 }	1·95
	A.		7	1·3	4 }		11 }	
Enteric ...	W.		21	0·17	35	0·2	50	0·37
	N.		136	1·4	103	0·9	76	0·73
	E.		3	0·3	4 }	0·4	3 }	0·2
	A.		—	—	2 }		— }	
Accident ...	W.		91	0·8	64	0·49	55	0·41
	N.		278	2·8	301	2·8	253	2·41
	E.		5	0·6	8 }	0·8	3 }	0·55
	A.		2	0·3	4 }		5 }	
Cancer ...	W.		50	0·4	53	0·4	54	0·40
	N.		10	0·10	13	0·12	5	0·04
	E.		1	0·12	3 }	0·34	3 }	0·34
	A.		4	0·77	2 }		2 }	
Miners' Phthisis ...	W.		40	0·32	71	0·54	71	0·52
	N.		45	0·4	47	0·44	87	0·82
	E.		1	0·12	— }	—	2 }	0·13
	A.		—	—	— }		— }	
Meningitis ...	W.		39	0·34	32	0·24	26	0·19
	N.		263	2·76	193	1·83	223	2·12
	E.		13	1·6	18 }	1·35	7 }	0·62
	A.		1	0·19	2 }		2 }	
Measles ...	W.		67	0·59	24	0·18	43	0·32
	N.		63	0·64	31	0·29	64	0·60
	E.		10	1·26	4 }	0·27	7 }	0·55
	A.		2	0·38	— }		1 }	
Epidemic Influenza ...	W.		6	0·05	3	0·02	13	0·09
	N.		—	—	—	0·13	—	0·06
	E.		—	—	2 }		1 }	
	A.		—	—	— }		— }	
Smallpox ...	W.		—	—	—	—	—	—
	N.		6	0·06	—	—	—	—
	E.		—	—	—	—	—	—
	A.		—	—	—	—	—	—
Whooping Cough ...	W.		9	0·08	20	0·15	3	0·02
	N.		2	0·02	5	0·04	2	0·01
	E.		2	0·26	1 }	0·06	— }	—
	A.		—	—	— }		— }	
Scarlet Fever ...	W.		22	0·19	15	0·11	17	0·12
	N.		—	—	—	—	—	—
	E.		—	—	—	—	— }	0·06
	A.		—	—	—	—	1 }	
Suicide or Murder ...	W.		38	0·33	36	0·27	37	0·27
	N.		36	0·37	23	0·21	20	0·19
	E.		1	0·12	—	—	1 }	0·20
	A.		3	0·56	—	—	2 }	

* These include congenital malformations, injuries and debility at birth, atelectasis icterus neonatorum, atrophy, marasmus, dentition, rickets.

The following observations are suggested by inspection of this Table:—

M.O.H. 1912-13

1. That during 1912-13 the Chief Factors of Mortality were:

Deaths.

- (a) For Whites: Diarrhœal diseases (196 deaths, 96 per cent. among children under 5); pneumonia (161); heart disease (123); developmental diseases (107); premature birth (73); miners' phthisis (71); accident (55); cancer (54); bronchitis (52); enteric fever (50); tuberculosis of lungs (49); nephritis or Bright's disease (44); measles (43); nervous diseases (37); suicide or murder (37); old age (26); and diphtheritic diseases (22).
- (b) For Natives: Pneumonia (1,133); tuberculosis of lungs (364); accident (253); meningitis (223); diarrhœal diseases (168); miners' phthisis (87); enteric fever (76); heart disease (65); measles (64); and other forms of tuberculosis (62).
- (c) For Eurafricans: Pneumonia (43); diarrhœal diseases (37); tuberculosis of lungs (24); developmental diseases (22); bronchitis (19); and heart disease (17).
- (d) For Asiatics: Diarrhœal diseases (17); pneumonia (17); bronchitis (11); heart disease (11); developmental diseases (10); and tuberculosis of lungs (7).

2. That the comparison with 1911-12 is as follows:—

- (a) As regards Whites, deaths from "diarrhœal diseases" fell from 226 to 196, and the "diarrhœal death-rate" from 1·7 to 1·46. Deaths from enteric numbered 50, as compared with 35 in 1911-12, equal to a death-rate of 0·37, as compared with 0·2. The number of cases of enteric notified in 1912-13 also showed a slight increase, being 281 as compared with 236 in the previous year. Whooping cough accounted for 3 deaths as against 20 in 1911-12. On the other hand, there was a material increase in the mortality from measles, and the death-rolls from tuberculosis, developmental diseases, pneumonia and heart disease were slightly less. The nominal death-rate from miners' phthisis was 0·5 as against 0·54.
- (b) With regard to Natives, there was an increase in pneumonia mortality, the deaths rising from 904 in 1911-12 to 1,133 in 1912-13, and the death-rate from 8·6 to 10·79. A slight improvement in the death-rate from tuberculosis (3·46 as against 3·7) is recorded. The death-rate from measles was 0·60 as against 0·29.
- (c) With regard to Eurafricans and Asiatics, the deaths from tuberculosis numbered 31, as compared with 40 in the previous year. On the other hand, the mortality from "diarrhœal diseases" was slightly higher, namely, 54 as against 43.

THE MORTALITY AMONGST NATIVES EMPLOYED ON MINES
AND WORKS IN THE LABOUR AREA OF THE TRANSVAAL.

In February, 1912, a Commission, known as the "Tuberculosis Commission," of which the Medical Officer of Health is a member, was appointed by the Union Government, with the following reference:—

- (a) To inquire into and take evidence for the purpose of ascertaining the extent and causes of the prevalence and spread of tuberculosis in its various forms among Europeans, Coloured Persons, Natives and Asiatics in the different areas of the Union; having regard, *inter alia*, to the effect of race, immigration, occupation, housing, and the concentration of persons in compounds, mission stations and locations, and of conditions of life generally, in spreading the disease; and to report as to the steps which can be profitably taken by the Government, local authorities and others for ameliorating the condition of those affected with the disease, and for controlling the disease in those areas in which it already prevails, and for preventing its introduction into fresh areas.

M.O.H. 1912-13

Deaths.
Infantile
Mortality.

(b) To inquire into and take evidence for the purpose of ascertaining the extent and causes of the mortality of natives employed on the Witwatersrand Mines and their susceptibility to pneumonia, with special reference to those coming from tropical areas, and to make recommendations thereon.

On the inset Table opposite this page are Returns of the Deaths and Death-rates per 1,000 from Certain Chief Causes amongst the various races of Natives in Johannesburg, employed respectively "on" and "off" the Mines, during the year 1912-13. These figures have been prepared by Mr. F. Thompson (Chief Clerk, Public Health Department).

INFANTILE MORTALITY.

By the statistical term "Infantile Mortality" is meant the number of deaths of infants under one year of age per each 1,000 births during a given period, and, in the words of the Registrar-General for England and Wales, infantile mortality "has always been regarded as a valuable test for the health of communities." In the following table the rates for Johannesburg are compared with the rates for various English communities, and for the other large towns in South Africa.

DEATHS OF INFANTS (WHITE) PER 1,000 BIRTHS.

CALENDAR YEAR.	1905	1906	1907	1908	1909	1910	1911	1912
95 Great Towns of Eng- land and Wales ...	140	145	127	129	118	115	141	101
141 Smaller Towns of England and Wales	132	138	122	124	111	104	133	—
Kimberley	125	151	119	106	80	117	106·3	—
OFFICIAL YEAR.	1905-6	1906-7	1907-8	1908-9	1909-10	1910-11	1911-12	1912-13
Capetown	129	91	100	89	104	94·4	98·1	—
Durban	100	69	91	67	46	90·3	98·5	57·7
Pretoria	140	99	106	121	76	104	84·8	95·17
Johannesburg	177	140	121	134	117	110	114	99·53

During 1911-12 there were 4,361 births and 499 deaths; in 1912-13 there were 4,310 births and 429 deaths. These figures correspond to an infantile mortality rate of 114 for the year 1911-12, and 99·5 for 1912-13.

Diarrhœal diseases and the effects of malnutrition were responsible for 56 per cent. of infant deaths. Early weaning, unsuitable hand-feeding and insanitary conditions of residence, giving rise to food contamination, are potent predisposing causes.

DEATHS OF INFANTS (COLOURED) PER 1,000 BIRTHS.

In the appended Table the Coloured Infant Mortality rates per 1,000 births for Johannesburg are contrasted with those for Pretoria, Kimberley and Capetown, as given in the latest available reports of the Medical Officers of Health of those towns:—

TOWN.	Year ending.	Natives.	Cape-Coloured or Mixed.	Asiatics.	Whites.
Pretoria	30.6.11	340	126	304	84·8
Capetown	30.6.12	186·8 for all Coloured Races.			98·1
Kimberley	31.12.11	370·5 for all Coloured Races.			106·3
Johannesburg	30.6.13	296 for Natives and Cape-Coloured.		246	99·53

Return of Deaths and Death-Rates (per 1,000) from Certain Causes amongst Natives in Johannesburg during the Year 1912-13.

“ On ” means employed in any capacity in or on a mine or housed at W.N.L.A. Compound. “ Off ” means not employed in any such capacity.
“ MINERS’ PHTHISIS ” is entered up as “ Silicosis.”

ORIGIN.	PNEUMONIA.			PHTHISIS AND TUBERCULOSIS.			SILICOSIS.			MENINGITIS.			ALL OTHER DISEASES.			AVERAGE ANNUAL POPULATION (WHERE AVAILABLE).	
	On		Off	On		Off	On		Off	On		Off	On		Off	On	Off
	Deaths	Rate	Deaths	Rate	Deaths	Rate	Deaths	Rate	Deaths	Rate	Deaths	Rate	Deaths	Rate	Deaths		
	Deaths	Rate	Deaths	Rate	Deaths	Rate	Deaths	Rate	Deaths	Rate	Deaths	Rate	Deaths	Rate	Deaths		
East Coast ...	569	22·51	8	8·11	186	7·36	5	5·09	2	2·03	120	4·74	...	346	13·69	25,269	981
Cape Colony ...	76	4·14	10	2·01	31	1·68	27	5·45	1	0·20	10	0·54	4	139	7·57	18,350	4,951
Brit. Basuto ...	53	14·77	3	2·98	14	3·90	5	4·97	...	...	3	0·83	...	25	6·96	3,587	1,005
Transvaal ...	53	8·42	40	2·65	22	3·49	26	1·72	1	0·06	5	0·79	8	24	3·81	6,290	15,094
Tropical ...	314	46·60	4	11·56	77	11·42	7	20·23	...	...	68	10·09	...	251	37·25	6,737	346
Coloured ...	1	...	43	...	1	...	27	...	1	...	2	...	5	3	...	...	...
All others ...	42	8·63	24	1·46	8	1·64	30	1·82	2	0·12	4	0·82	3	33	6·78	4,864	16,354
Totals ...	1,108	17·00	132	2·29	340	5·20	127	2·58	7	0·15	212	3·22	20	821	12·56	65,097	38,731

The Director of Native Labour has kindly supplied the average population figures used above.

NOTE.—In reference to a similar table published in the Medical Officer of Health’s Report for 1911-12, the following pertinent criticism appeared in *The Transvaal Medical Journal* of January, 1913:—“ This table must be interpreted with the greatest caution or it will be entirely misleading. . . . The difficulties arise from two causes—firstly, “ that natives arriving on the Rand suffer from many diseases, *e.g.*, pneumonia and cerebro-spinal meningitis, much more heavily during their first few weeks of residence than “ subsequently; and, secondly, that the Witwatersrand Native Labour Association have their Receiving Compound ” [where both arriving and departing mine-natives for the whole Witwatersrand area are detained for varying periods] “ within the Municipal Area. The average population, therefore, of Tropical natives, and, to a lesser extent, East Coast “ natives, used as a basis for the compilation of death-rates is quite misleading in regard to these groups. To take a concrete instance, the death-rate from meningitis amongst “ Tropical natives is given for mine boys as 15·7, on an assumed population of 6,630, whereas for non-mine boys it is only 0·9. Now, comparatively few cases of meningitis occur “ after the first 14 to 21 days’ residence. The population passing through the Witwatersrand Native Labour Association Compound alone in one year is considerably more than “ double the number given as the average annual population; if, therefore, all these ‘ boys ’ had remained resident in Johannesburg for 52 weeks instead of 3, their death-rate “ for the period would have fallen to less than half that shown; in other words, the longer they spend in the district the lower would their mortality-rate become—clearly an “ anomaly. This example may serve to indicate the danger of interpreting this table too literally; in fact, in regard to Tropical and East Coast natives, it is doubtful whether “ any useful deductions can be drawn from the figures given without considerably more information than is furnished in the table.”

The question of Infantile Mortality was dealt with at considerable length in the Medical Officer of Health's Report for 1909-11 (*v.* pp. 10-21).

In Table 28a, at page 73 *et seq.*, of the Report for the year 1911 of the Registrar-General for England and Wales is analysed "The Mortality of Legitimate Infants in Relation to Occupation of Father." At page xli. of same Report the deductions from this Table are discussed as follows:—

"Much may be learnt from this table as to the extent to which infant mortality can be regarded as preventable. For instance, the middle-class mortality was only 61 per cent. of the total legitimate infant mortality of the country. This at once suggests that at least 40 per cent. of the present infant mortality of this country could be avoided if the health conditions of infant life in general could be approximated to those met with in Class 1. But Table 28a shows that the mortality of this class, 76.4 per 1,000 births, by no means represents all that is possible. Rates of under 50 are not very uncommon amongst the professional classes—that for army officers is 44, for naval officers and for solicitors 41, for medical practitioners 39, and for artists 27. Figures like these show how little of our infant mortality is essentially inevitable. No doubt it must be long before the average infant can receive the intelligent care bestowed upon that of the officer, solicitor or doctor, and no doubt also a proportion of the advantage enjoyed by the latter is dependent upon ante-natal causes, so that more than care of the infant is required to equalise matters. It may probably be assumed, however, that if health conditions were equally good for all classes of society (and till this is so the inferior conditions must always involve preventable mortality), most of any congenital disadvantage which the labourer's infant suffers would disappear. If this is the case, there seems no reason to consider the limit of improvement reached till infant mortality in general is reduced to the level where that of the professional classes now stands, or, say, to one-third of its present amount. Even if it cannot be anticipated that the mortality of the working man's infant will ever fall to quite so low a level as that of the professional man's, it may still fall to the level where the latter at present stands, for there is no reason to suppose that the limit of improvement has yet been reached in this matter by any class."

APPOINTMENT OF HEALTH VISITORS.

Two Health Visitors (Miss Sisterson and Miss Morisse) were appointed in July, 1911.

Their duties were defined generally as follows:—

- (1) To visit all houses as soon as possible after the occurrence of a birth, where instructed to do so by the Medical Officer of Health.
- (2) To obtain certain information, as to sanitary conditions, etc., as required by the Medical Officer.
- (3) In cases where no doctor or properly qualified nurse is in attendance, to volunteer certain advice in regard to the case and the feeding of the infant. If refused in any instance, no further action to be taken, unless the death of the infant occurs.
- (4) To re-visit certain selected cases at regular intervals.
- (5) To investigate all cases of infantile death—*i.e.*, deaths under the age of twelve years—for the purpose of obtaining certain information when required by the Medical Officer of Health.
- (6) To investigate, when specially instructed thereto, the sanitary conditions in shops, workshops, laundries and other places where female workers are employed.

Appended is the joint report of the two Health Visitors for the twelve months 1st July, 1912—30th June, 1913:—

Health
Visitors.

ANNUAL REPORT OF HEALTH VISITORS.

During the year 1912-13 the following visits were paid by us, viz., in connection with births, 962; in connection with deaths, 97; re-visits, 4,168.

Our work has been done in the following districts: Fordsburg, Vrededorp, Braamfontein, Ferreira's Township, Marshalls Township, Ophirton, Doornfontein, Jeppestown and Extension, Bertrams and centre of town.

Houses have been visited after the birth has been registered, but, in the majority of cases, some time elapses between the birth and registration. This will be remedied by the enforcement of Section 189 of the Local Government Ordinance of 1912, which provides for early notification of births.

In an increasing number of cases we have found patients whom we have previously visited, and who have moved out of town, have returned for the time of their confinements. This fact proves that they are realising the necessity of good nursing.

This year we are able to note a gradual improvement in every way in homes which we have visited for the second birth since we started our work. We still continue to impress upon the mothers the advantages of regular breast feeding, daily bathing, ventilation, fresh air and proper clothing, and to warn them against the harmful use of the dummy and sugar bags which mothers very frequently give their babies.

In cases where we have found infants with bad eyes, and other unsatisfactory conditions, we have paid frequent visits and given any help possible.

We are pleased to state that Sister Ellershaw has opened a Branch of her Maternity Home in Vrededorp, and sends out nurses to paying and free cases. Her venture has been successful, which shews that patients are appreciating trained nurses. We endeavour, whenever possible, to secure expectant mothers in poor circumstances free admission to the Queen Victoria Hospital, or we arrange with Miss Ellershaw to attend them free.

In cases of poverty, we have appealed to the Rand Aid Association for assistance, but since the withdrawal of the Municipal grant they are unable to give us the necessary help. Sister Ollerenshaw, of the Central Deaconess' Society, has also helped us with food, clothing and medicines in special cases, but here again we cannot get the same help as formerly owing to the same reason.

We are still hampered in our work by the continual changing of address of families visited, though in a number of cases we are notified of the change.

The need of milk depôts still exists.

According to instructions from the Medical Officer of Health, a certain time was spent in inspecting shops and offices to ascertain the sanitary accommodation provided for the women employed. On the whole, the conditions were satisfactory, only a few places needing attention.

The duties of Health Visitors demand energy, tempered by tact and discretion. From the foregoing record of your Health Visitors' work for the past twelve months, coupled with their obvious interest therein, and with the fact that no complaint of officiousness or unwelcome interference has been received, the Medical Officer of Health concludes that their efforts have been appreciated by, and beneficial to, a considerable number of individuals. Both Visitors possess the Sanitary Inspector's Certificate of the Royal Sanitary Institute, and both are otherwise well qualified for the work.

M.O.H. 1912-13

PNEUMONIA.

Pneumonia.
Enteric
Fever.

The following are the figures as to pneumonia deaths for the period under review and the three previous years:—

YEAR.				WHITES.	S.A. COLOURED.	EURAFRICANS.	ASIATICS.
1909-10	...	...	...	146	670	39	11
1910-11	...	...	...	178	1,190	45	2
1911-12	...	...	...	173	925	33	11
1912-13	...	...	...	165	1,196	44	17

The death-rates per 1,000 from this disease are as follows:—

				WHITES.	S.A. COLOURED.	ASIATICS.	LONDON.
1906-7	...	...	...	1.1	6.6	0.88	1.4 (1906)
1907-8	...	...	...	1.2	9.3	1.9	1.3 (1907)
1908-9	...	...	...	1.3	9.6	1.4	1.4 (1908)
1909-10	...	...	...	1.3	6.8	2.1	1.4 (1909)
1910-11	...	...	...	1.4	11.9	4.1	1.3 (1910)

				WHITES.	NATIVES.	EURAFRICANS AND ASIATICS.	LONDON.
1911-12	...	...	...	1.29	8.6	3.77	1.2 (1911)
1912-13	...	...	...	1.20	10.79	3.07	

Cases of pneumonia ending fatally amongst Asiatics, of which intimation is received daily from the Registrar of Births and Deaths, are at once inquired into, in view of the possibility of plague first appearing in the pneumonic form.

Medical practitioners are also circularised from time to time in reference to this possibility and to the free examination of the sputum of any case to which suspicion may attach.

ENTERIC OR TYPHOID FEVER.

Appended are the statistical particulars for the period under notice and the nine preceding years:—

YEAR.				WHITES.			NATIVES.		EURAFRICANS.		ASIATICS.	
				Cases.	Deaths.	Deaths per cent.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
1903-4	...	...	...	1,009	126	12.4	—	—	—	99	—	5
1904-5	...	...	...	454	46	10.1	266	—	—	125	8	1
1905-6	...	...	...	617	84	13.6	232	—	—	99	29	7
1906-7	...	...	...	385	42	10.8	342	—	—	161	12	6
1907-8	...	...	...	446	31	6.9	348	—	—	102	20	5
1908-9	...	...	...	373	37	9.9	296	—	—	123	3	3
1909-10	...	...	...	271	21	7.7	470	146	8	1	—	—
1910-11	...	...	...	277	25	9.02	497	137	12	3	5	—
1911-12	...	...	...	310	39	12.58	365	104	12	4	6	2
1912-13	...	...	...	354	52	14.12	248	80	9	3	3	—

A large number of imported cases, *i.e.*, persons developing or suffering from enteric, came from outside districts into the hospitals and nursing homes of Johannesburg. Excluding deaths amongst this class (see Tables A-D), the mortality rates from enteric per 1,000 of the population were as follow:—

M.O.H. 1912-13

Enteric
Fever.
Diarrhoeal
Diseases.

	1903-4	1904-5	1905-6	1906-7	1907-8	1908-9	1909-10	1910-11	1911-12	1912-13
Whites ...	1·3	·4	·7	·4	·3	·3	0·15	0·18	0·27	0·37
Natives } ...	1·4	1·6	1·4	2·0	1·2	1·5	1·42	1·35	0·9	0·73
Eurafricans }									0·4	0·2
Asiatics ...	·6	·09	·8	·9	·7	·4	—	—		
95 Great Towns, Eng. & Wales	·12	·10	·08	·09	·07	·08	0·06	0·05	0·06	0·04

In 1911-12 there were 236 cases, with 35 deaths (or a case-mortality of 14·8 per cent.), excluding persons who came into Johannesburg suffering from the disease. In 1912-13 there were 281 cases, and 50 deaths (or a case-mortality of 17·7 per cent.). It will thus be seen that the type of the disease in 1912-13 was 20 per cent. more fatal than in 1911-12, and that the notifications exceeded by 44 (or 15·6 per cent.) those of 1911-12. Certain local and somewhat unusual circumstances were, however, ascertained, to which, in the opinion of the Medical Officer of Health, a large proportion of the excess of 1912-13 may fairly be attributed. Thus, no less than 21 cases in January, 1913, were believed to be directly or indirectly due to the infection of a milk supply at Waverley by a native "typhoid-carrier," and, about the same time, a group of seven cases occurred amongst persons who had drunk water from a grossly polluted spring near Orange Grove. In March four cases were notified in one small house in Fordsburg, and four others in a cottage in Norwood; whilst in April seven cases arose in Newlands, where the only source of water supply was unprotected shallow wells liable to gross contamination.

DIARRHOEAL DISEASES.

The following are the mortality figures for the period under notice:—

	WHITES.	NATIVES.	EURAFRI- CANS.	ASIATICS.
Diarrhoea and Dysentery ...	180	162	33	15
Enteritis ...	16	6	4	2
	196	168	37	17

DEATH-RATE (DIARRHOEAL DISEASES) PER 1,000 OF POPULATION LIVING.

	WHITES.	NATIVES AND EURAFRICANS.	ASIATICS.	77 GREAT TOWNS IN ENGLAND.
1903-4 ...	3·82	4·77	·89	·83
1904-5 ..	2·49	3·83	·39	·83
1905-6 ...	3·34	4·18	1·26	·83
1906-7 ...	2·26	3·21	1·62	1·16
1907-8 ...	1·52	1·76	1·18	·4
1908-9 ...	2·22	1·95	·88	·65
1909-10 ...	1·63	1·55	1·73	·38
1910-11 ...	1·58	2·08	3·09	·38
	WHITES.	NATIVES.	EURAFRICANS AND ASIATICS.	95 GREAT TOWNS IN ENGLAND.
1911-12 ...	1·7	1·9	3·07	1·31
1912-13 ...	1·46	1·60	3·77	1·55

M.O.H. 1912-13

Diarrhoeal
Diseases.
Meningitis.
Tuberculosis.

The proportion of the foregoing deaths which took place amongst the children under five years of age of the different races was:—For Whites, 96 per cent.; Natives, 22 per cent.; Eurafrians, 62 per cent.; Asiatics, 50 per cent.

As regards both S.A. Coloured and Asiatics in Johannesburg, it must, however, be remembered that comparatively and absolutely there are very few children. Diarrhoeal diseases are the chief cause of death amongst children under five years.

MENINGITIS.

The characteristics of this disease were fully dealt with in the Medical Officer of Health's Report for 1904-6 (see pp. 20-24):—

The ages at death are set out in the following table:—

DEATHS—1912-1913.

	All ages.	—1	—5	—15	—25	—35	—45	—65	65
Whites ...	28	12	8	5	—	—	1	2	—
Natives ...	225	4	—	1	95	105	16	4	—
Eurafrians ...	7	5	2	—	—	—	—	—	—
Asiatics ...	2	—	—	1	—	—	1	—	—
Totals ...	262	21	10	7	95	105	18	6	—

With regard to the results of bacterial examination of 477 suspected cases of meningitis from 1st July, 1906, to 30th June, 1913, the Government Bacteriologist has kindly furnished the following figures:—Meningococcus present in 146 cases; pneumococcus in 85; meningococcus and pneumococcus in 0; streptococcus in 21; pneumococcus with streptococcus in 2; tubercle bacillus in 1; B. Jeyocaneus in 1; coliform bacillus in 1; none of the foregoing in 220.

Age Incidence.—(a) *Amongst Whites.*—Of the 28 deaths, 25 were amongst persons under 15 years, 20 being very young children.

(b) *Amongst Eurafrians.*—All of the seven deaths were those of children under five.

(c) *Amongst Natives* the age-incidence was just the reverse of that amongst Whites and Eurafrians, 220 out of 225 being deaths of persons over 15 years of age.

(d) *Amongst Asiatics.*—One case was that of a child under five years.

TUBERCULOSIS.

Appended is a statistical summary of the mortality from Tuberculosis in Johannesburg for the two years 1911-12 and 1912-13:—

DEATH-RATE PER 1,000.

			PULMONARY PHTHISIS.		TUBERCULAR MENINGITIS.		OTHER FORMS OF TUBERCULOSIS.	
			1911-12	1912-13	1911-12	1912-13	1911-12	1912-13
Johannesburg—								
Whites ...	...	...	0·449	0·36	·023	0·014	·046	·067
Natives ...	...	...	3·762	3·467	·047	·023	·638	·571
Asiatics and Eurafrians			2·797	1·677	·0139	·019	·209	·069
			1911	1912	1911	1912	1911	1912
London ...	...	...	1·34	1·34	·176	·147	·199	·157
England and Wales	...	...	—	—	—	—	—	—

A. AMONGST WHITES :—

M.O.H. 1912-13

During the six years 1907-8, 1908-9, 1909-10, 1910-11, 1911-12 and 1912-13, inquiry has been made in regard to each death from tuberculosis, with a view to obtaining some idea as to—

- (a) the proportion of fatal cases which may probably be regarded as “imported,” i.e., in which the infection was contracted before the deceased person came to South Africa;
- (b) the proportion in which the disease was acquired during residence in South Africa; and
- (c) the effect of occupation.

During the period in question, 549 whites died from tuberculosis. Of these, 296 were British-born, 68 hailed from other European countries, and 185 were Afrikanders, including 91 of English and 94 of Dutch descent.

The value of the results of our inquiries, as set out in the following Tables, depends, of course, on the accuracy of the information recorded in the death certificate or subsequently furnished to your inspector. This accuracy is often very questionable. The figures have also to be considered in connection with the results of recorded observations in Europe—viz., that a very large percentage of the population of large towns have been subject to attack by tuberculosis by the time they reach adult life, and that the larger proportion of these persons survive the attack.

DEATHS FROM TUBERCULOSIS OF OVERSEA IMMIGRANTS IN JOHANNESBURG.

1st July, 1907, to 30th June, 1913.

B=Infected before arrival in South Africa. A=Infection first manifested after arrival in South Africa.

		YEARS OF RESIDENCE IN SOUTH AFRICA.																			
		—1		—2		—3		—4		—5		—10		—15		—20		+ 20		Total.	
		B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
British Born	...	9	4	10	6	9	4	5	2	6	8	19	46	19	48	11	30	8	20	96	168
Other Europeans	...	—	4	2	1	—	3	—	—	3	2	1	13	2	10	1	4	1	7	10	44
Totals	...	9	8	12	7	9	7	5	2	9	10	20	59	21	58	12	34	9	27	106	212

In addition there were 32 deaths of British-born persons and 14 of other Europeans, the length of whose residence in South Africa was unknown.

The proportion of fatal cases which may probably be regarded as “imported ” is as 106 : 443, or about 24 per cent.

The proportion in which the disease appears to have been contracted in South Africa is made up of deaths of immigrants in whom infection was first manifested after arrival, viz., 212, plus deaths of Afrikanders, viz., 185, and is therefore 397 : 152, or about 38 per cent.

M.O.H. 1912-13

Details as to "Occupation" are as follows:—

Tuberculosis.

Occupation.	Under 1 year.			—2—	—3—	—4—	—5—	—6—	—7—	—8—	—9—	—10—	—11—	—12—	—15—	—20—	+20	Unknown.	All Ages.
	3ms	6ms	12m																
MINERS—																			
Machine Drillers ...	3	10	21	22	6	7	7	4	4	1	2	1	2	—	1	2	2	—	95
Other Under-ground ...	9	13	23	19	9	7	4	4	3	—	2	1	1	1	2	1	2	7	108
Surface ...	3	2	3	4	—	—	2	—	—	1	—	—	—	—	—	1	—	2	18
Engine Drivers and Fitters ...	2	—	1	6	3	3	2	2	1	—	3	1	—	1	1	—	3	—	29
Clerks & Salesmen ...	7	9	6	11	7	7	3	4	5	2	1	2	—	2	4	1	—	3	74
Housewives ...	7	8	2	12	7	2	8	2	1	3	2	1	—	—	3	2	4	3	67
Painters ...	—	2	—	—	1	—	—	—	—	—	—	—	—	1	—	—	—	—	4
Carpenters ...	1	1	—	—	—	1	—	—	—	1	1	1	—	—	—	—	—	—	6
All others ...	32	12	20	28	13	5	7	5	3	5	2	3	1	3	1	3	1	4	148
Totals ...	64	57	76	102	46	32	33	21	17	13	13	10	4	8	12	10	12	19	549

203 deaths, or 36·9 per cent. of the total mortality from tuberculosis, occurred amongst miners employed underground, and in the majority of cases was probably associated with silicosis, 95, or nearly one-half, being those of machine-drillers. In 38·9 per cent. of cases death occurred during the first year of illness, and in another 20·1 per cent. before the end of the second year; in five years 78·8 per cent. were dead.

It is clear that the registered deaths from tuberculosis amongst miners (221), and the percentage figure calculated thereon, must be increased by the addition of all tuberculosis deaths amongst repatriated miners before the true percentage of such deaths amongst the mining and non-mining communities respectively can be ascertained.

Clerks and salesmen furnish the next largest number of deaths (74) from tuberculosis. It is not improbable that some of this class were men who, becoming incapacitated through mine work, were forced to take to lighter employment. More than 70 per cent. of this class died within five years of infection.

Housewives contributed 67 deaths, and 65 per cent. of these sufferers succumbed before the end of the fifth year of illness.

B. AMONGST NATIVES:—

Of the 574 deaths registered during 1912-13, 180 were those of persons from the East Coast (chiefly Portuguese "boys"), 5 from British Central Africa, 24 from Transvaal, 14 from Orange Free State, 20 from Natal, 40 from Cape Colony, 5 from Rhodesia, 52 from Basutoland, 29 from Zululand, whilst 5 were classed as "unknown."

362 of the deceased persons were males and 12 females. The great majority of the males were mine boys (303) and labourers (59), including house and stable boys. Practically all of these were between the ages of 15 and 45 years.

The duration of illness was as follows:—39 died in less than one month; 117 under three months; 78 under six months; 57 under twelve months; 5 under eighteen months; 11 under two years; 29 after illness of more than two years. In 38 cases the duration of illness was unknown.

Voluntary Notification commenced in July, 1907. Appended are results to 30th June, 1913:—

M.O.H. 1912-13

	1906-7		1907-8		1908-9		1909-10		1910-11		1911-12		1912-13		Total.		Tuberculosis. Miners' Phthisis. Heart Disease. Rheumatism.
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	
Whites ...	1	73	90	61	26	66	68	60	104	79	62	78	44	64	395	481	
Coloured ...	—	299	166	280	44	258	97	326	226	385	249	481	243	469	1,025	2,498	
Asiatics ...	—	14	7	12	1	12	—	9	5	6	5	40	2	9	15	102	
Totals ...	1	386	263	353	71	336	165	395	335	470	316	599	289	542	1,435	3,081	

On 26th September, 1913, a mattress on which a person had died on 25th September, 1913, from tuberculosis was taken from the house of Dr. Bensusan, of Johannesburg, to the Municipal Steam Disinfector. After its return, Dr. Bensusan removed a flannelette spit-rag which was adhering to it. This spit-rag was kept in a sealed envelope, and delivered at Dr. Pitchford's laboratory on the 3rd October, 1913, folded, and having its folds stuck together by dried pus. The flannelette was opened out, and portions of its inner surface cut off, with antiseptic precautions. A guinea pig inoculated on the 3rd October, 1913, with an extract made from one of the fragments was killed on the 20th November, 1913, and was found to have developed tuberculosis. In addition, abundant microbial growth (motile bacilli, staphylococci and streptococci) was obtained by direct cultivation, which appears to raise the presumption that, by some oversight, the mattress was returned without having undergone any process of disinfection.

MINERS' PHTHISIS, ROCKDRILL PNEUMONIA OR SILICOSIS.

The registered deaths from this disease are recorded below:—

YEAR.			WHITES.	NATIVES.	EURAFRICANS.	ASIATICS.
1909-10	...	...	34	22	—	—
1910-11	...	...	44	47	1	—
1911-12	...	...	73	47	—	—
1912-13	...	...	71	87	2	—

ORGANIC DISEASES OF HEART.

These heart affections include pericarditis, endocarditis, valvular disease and hypertrophy. The deaths recorded during the year July 1st, 1912—June 30th, 1913, were 140 for Whites, 67 for Natives, 19 for Eurafrians, and 11 for Asiatics.

Of the White deaths, 108 were those of males and 32 those of females, indicating a considerably greater proportionate incidence on males. Twenty died under 15 years of age and 120 at later periods.

ACUTE RHEUMATISM OR RHEUMATIC FEVER.

As heart disease is a frequent sequel of acute rheumatism, it is noteworthy that the death-rate per 1,000 for the year from the latter malady is 0·084 for Whites, 0·14 for Natives, 0·139 for Eurafrians and Asiatics, as against 0·054 in England and Wales in 1911.

It is now recognised that rheumatic fever or acute rheumatism is a specific disease, and quite distinct from ordinary rheumatism as to its origin. Various eminent English and Continental bacteriologists believe that it is caused by an organism known as the micrococcus rheumaticus.

M.O.H. 1912-13

Rheumatism.
Cancer.

In England and elsewhere, acute rheumatism has been observed to manifest itself in excessive, or even epidemic, prevalence at irregular intervals of from three to six years, and its annual and seasonal curves resemble, in a very remarkable manner, those of erysipelas and puerperal fever.

In the past it has usually been held that cold and damp situations are contributory factors in its prevalence, but more recent investigation tends to show that meteorological conditions exert little or no such influence. Indeed, Dr. Newsholme, C.B. (Chief Medical Officer of the Local Government Board, England), has shown that there is a very definite association between deficient rainfall, low ground water, and high soil temperature on the one hand, and the prevalence of rheumatic fever on the other.

Contrary to what is usually believed, high and dry lands, where the temperature varies between wide limits in the twenty-four hours, appear to be particularly conducive to rheumatic fever. Thus, it is of comparatively frequent occurrence in Egypt, South Africa, Central Arabia and the higher elevated plateaux of Bavaria and Mexico; whilst in lower and moister localities of a more even but equally high temperature it is infrequent.

MALIGNANT DISEASE OR CANCER.

The deaths from cancer were 62 for the year 1912-13. Of the total, 39 were males and 23 females, and 54 (36 males and 18 females) occurred at ages over 35. Stated in terms of the 1911 census population, the mortality was 0·49 per 1,000 for males and 0·43 per 1,000 for females, as against 0·89 for males and 1·08 for females in England and Wales in 1911.

The English Registrar-General points out, however, that cancer-rates are most correctly estimated by comparing the total deaths at ages above 35 years with the number then living, and as the matter of cancer death-rates is one of some general interest, Dr. G. D. Maynard has kindly worked out the following comparative rates:—

EUROPEAN CANCER DEATH-RATES PER MILLION.

	Total.	Males.	Females.
Johannesburg— Crude Annual Death-rate for 1912-13 	463	487	427
Johannesburg— Corrected Annual Death-rate for 1912-13 Correction Factors obtained from Census Report of 1910.	751	714	712
Cancer Death-rate, England and Wales, 1911 	993	891	1,088
Corrected Cancer Death-rate, England and Wales, all Districts, 1911 	950	869	1,025
Comparative Mortality of Local Corrected Death-rates, putting England Urban Rates=100.	79	82	69
Johannesburg— Crude Death-rates for ages 35 and over 	1,098	1,043	1,227
England and Wales— Crude Death-rates for ages 35 and over as (1891-1900) ...	2,316	1,870	2,715

In 7 cases the seat of the disease was not stated; in 21 the stomach was affected; in 10 the face or neck; in 6 the liver; in 4 the womb; in 3 the kidney; in 2 each the breast, prostate, lungs and bowels; and in 1 each the heart, rib and rectum.

Natives—

Five deaths were recorded, 3 being at ages under 35 and 2 at later periods. The parts affected are recorded as follows: Liver, 1; uterus, 1; face, 1; not stated, 2. The death-rate per 1,000 living was 0·047, but it should be remembered that this population consists in Johannesburg mainly of young male adults, who remain here a comparatively short time.

Eurafricans—

M.O.H. 1912-13

Four deaths were recorded, 3 female and 1 male, all over 35. In two female cases the womb was affected, and in the male case the liver; one female case was unspecified.

Cancer.
Syphilis.
Smallpox.

Asiatics—

Three deaths (all males) occurred, at ages above 35. The part affected in two cases was the stomach, and in the other the neck.

SYPHILIS.

One adult European, 4 adult natives, 3 infant Eurafricans and 2 adult Asiatics are registered as having died from this disease between July 1st, 1912, and June 30th, 1913.

Appended is a return kindly supplied by Dr. Mehliß, of the Johannesburg cases of syphilis and other venereal diseases treated at the Lazaretto during the years 1906-13 :—

Years.		Whites.		Coloured.	
1906-7	257	332	
1907-8	185	324	
1908-9	179	323	
1909-10	185	327	
1910-11	219	397	
1911-12	227	220	
1912-13	216	389	

INFECTION OF CHILD WITH SYPHILIS BY PLAYMATES.

The following distressing case came to notice during the year :—In July, 1912, a fine boy, A. B., of four years of age, who up to that time had been exceedingly healthy, came to live in Jeppestown. In the immediate vicinity lived a family named X, and the yards of the two houses opened out on to a piece of waste land, where the children used to meet and play. After a while, Mrs. B. noticed that her little boy had developed a sore mouth, and drew her medical attendant's attention to the fact that the X children, with whom her little boy had played, had also sore mouths. It was then found that these children were suffering from syphilis, and had apparently infected Mrs. B.'s child, who died from the disease in May, 1913.

SMALLPOX.

A serious outbreak of smallpox commenced on 25th July, 1912, at Stand No. 689, Delvers Street, Marshalls. In all, 83 cases were dealt with, the last one of which was notified on 24th September, 1912.

In the appended table, particulars as to race, sex and conditions as to vaccination of the sufferers are set forth :—

Race.	Vaccinated in Infancy.		Un-vaccinated.		Doubtful.		Total.			Died.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Total.	Male.	Female.
Whites ...	8	2	3	4	—	—	11	6	17	1	—
Natives ...	2	1	12	9	1	—	15	10	25	—	—
Eurafricans ...	1	1	12	23	—	—	13	24	37	—	1
Asiatics ...	—	—	2	2	—	—	2	2	4	—	—
Total ...	11	4	29	38	1	—	41	42	83	1	1

With regard to the two deaths, the white case had been vaccinated in infancy, and the Eurafrican had never been vaccinated.

M.O.H. 1912-13

Smallpox.

As the foregoing Table shews, only 17 of the 83 reported cases were amongst Whites, and the disease was practically confined to the district in which coloured people most do congregate, viz., between Market Street to the north and the Mine Fence to the south. In the course of this outbreak it came to light that, though the first notification was received on 25th July, a coloured child had sickened with smallpox on 1st June in a block of old dwellings east of "The Leader" office, in which dwellings three more unreported cases were discovered on 7th August. It was further ascertained that in the last week in May two native children, at the corner of Nugget and Durban Streets, had developed the disease; and, though direct connection has not been demonstrated, the Medical Officer of Health has little doubt that these cases—and, therefore, the whole of the July-September outbreak—were caused by infection from other unrecognised coloured cases in continuation of the outbreak of the previous December-February. In addition to the dwellings each of "The Leader" office, a coloured school in Market Street was found to be a centre of infection and was promptly closed.

Your Office, Inspectorial and Disinfecting Staffs carried out the very large amount of extra work thrown upon them with their usual willingness, energy and success, and the Medical Officer of Health records with pleasure that their efforts were appreciated by the Public Health Committee, and rewarded with a suitable bonus.

The following Free Vaccinating Stations were opened on 10th August, 1913:—Corner of Mint and Fountain Roads, Fordsburg; corner of Bertha and Hay Streets, Turffontein; 11, Derby Road, Bertrams; Sutherland Avenue, Argyll; Receiving Hospital, Milner Park; Tent adjoining Fire Station, Fairview; corner of Harrow Road and Hopkins Street, Yeoville; corner of Menton and Richmond Roads, Richmond; Room adjoining Post Office, Third Avenue, Melville. A few days afterwards stations were also opened at Norwood, Marshalls and Ferreiras—the two latter for coloured persons.

Vaccinating Officers visited the Public Schools, and all children who had brought permission from their parents in writing were vaccinated.

Circular letters were sent to all Mine Managers, drawing attention to the outbreak, and recommending re-vaccination of every person employed on the mine.

The Total Number of Vaccinations Performed was 34,605, made up as follows:—

Whites	...	...	...	...	22,828
Eurafricans and Natives	...	...	...	...	11,867

The Cost of the Outbreak was as follows:—

Vaccination	...	...	...	...	£660	17	1
Extra Assistance	...	...	...	...	67	15	8
Bonus to Staff	...	...	...	...	166	10	0
Sundries	...	...	...	...	84	19	11
Total	...	...	...	...	£980	2	8

The Medical Officer of Health desires to record his obligation to Acting Chief Officer Rowe, of the Fire Brigade, for prompt and valuable assistance in ambulance work and the provision of facilities for establishing Vaccinating Stations.

SECOND ATTACKS OF SMALLPOX IN SAME PERSON.

In February, 1912, the Medical Officer of Health was asked in cross-examination during a prosecution whether he had ever seen smallpox in a person who had previously suffered from it? He replied that he had not, and at that time he had not read of it.

In the "Weekly Health Reports of the United States Public Health Service," Volume XXVIII., No. 18, issued on 2nd May, 1913, there appears at page 837 an article headed "Smallpox in Germany during 1908-9." In this article it is stated that during 1908 there were 434 cases of smallpox in the German Empire, and that "of these patients, two had previously had

“smallpox. One case was in a man 44 years of age, who had the disease in childhood, and bore on his face and body the scars resulting from his preceding attack; the other case was in a man 52 years of age, who had smallpox in 1871, and showed no scars.”

M.O.H. 1912-13

Smallpox.
Scarlet
Fever.

During the course of a visit to the Smallpox Lazaretto at Port Louis, Mauritius, in August, 1913, the Medical Officer of Health mentioned the question of second attacks to the Hon. Robert Denman, Director of Medical and Sanitary Services. Dr. Denman thereupon drew attention to two cases of second attack in the Hospital at the moment, and, in addition, gave the following particulars:—

- (1) H. G., aged 37. Had smallpox in 1891; admitted with marks of old attack still visible on 24th March, 1913. Died on 10th April, 1913.
- (2) G. B.; imbecile. Admitted to Lazaretto on 24th April, 1913; was suffering from distinct smallpox in the convalescent stage. Discharged on 8th May, and returned on 20th May with a second attack.

Dr. Denman also drew attention to the fact that Louis XV. of France died of a second attack of smallpox. From Dr. Cabane’s work, “*Les Morts Mystérieuses de l’Histoire*” (*Deuxième Serie; Paris, Albin Michel, Editeur*), it appears that Louis XV. was attacked with smallpox in 1728 and recovered, and that on the 10th May, 1774, he died of a second attack of smallpox.

SCARLET FEVER.

			1910-11		1911-12		1912-13	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Whites	...	...	668	22	534	15	1,122	17
Natives	...	...	1	—	—	—	2	—
Eurafricans	...	...	5	—	1	—	6	—
Asiatics	...	...	1	—	1	—	—	1

In 1912-13 the mortality was equal to 0·12 per 1,000 persons living, which is double the 1912 rate for the 95 Great English Towns, namely, 0·06. On the other hand, individual English towns suffered more severely than Johannesburg, the rate for Preston being 0·31; for Aberdare, 0·27; for Dewsbury, 0·24; and for Barnsley, Middlesborough and Darlington, 0·19.

The preventive value of the isolation in hospital of scarlet fever cases has for a good many years been a debateable question. Personally, your Medical Officer of Health is of opinion that if cases can be removed, as is sometimes possible during outbreaks in public institutions, at the first sign of illness, such prompt removal has a distinct preventive effect. But this preventive effect diminishes, often almost to vanishing point, when 48-72 or more hours are allowed to elapse between the onset of illness and the receipt of notification, a delay which is generally unavoidable in ordinary practice, owing to the impossibility of very early diagnosis. The questionable value of removing well-established scarlet fever cases to hospital is clearly indicated by figures carefully compiled in Birmingham, and set out at pp. 19-22 of the 1911 Report of the Medical Officer of Health for that city:—“The results for 1911 were as follows: Where the primary case was removed to hospital, the number of secondary cases per 1,000 susceptible persons remaining was 75·0; where the primary case was treated at home, the number of cases per 1,000 susceptible persons remaining was 71·3.”

In Johannesburg, only carefully selected cases of scarlet fever are removed to the Isolation Wards, unless the patient or his friends guarantee payment of all expenses.

M.O.H. 1912-13

DIPHtherITIC DISEASE, INCLUDING MEMBRANOUS CROUP.

Diphtheria.
Erysipelas.
Measles.
Plague.

			1905-6		1906-7		1907-8		1908-9		1909-10		1910-11		1911-12		1912-13	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Whites	...	...	34	17	16	11	31	11	46	18	40	22	60	20	125	22	81	22
Natives	...	...	4	2	2	4	3	2	2	—	4	1	3	1	7	—	5	2
Eurafricans	...	...	—	—	—	—	—	—	—	—	2	3	—	3	1	1	3	2
Asiatics	...	...	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—

In 1912-13 there was a marked decrease (89 as against 133) of *cases* notified, but the *case-mortality* was considerably greater, the number of deaths being 26, as against 24. The mortality for Whites per 1,000 living was 0·15, as against 0·18 in 1911-12, and 0·16 in 1910-11. In the 95 Great Towns in England in 1912 the mortality per 1,000 was 0·13.

ERYSIPELAS.

			1909-10		1910-11		1911-12		1912-13	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Whites	...	...	38	1	82	8	77	5	43	5
Natives	...	...	22	11	45	8	44	7	36	4
Eurafricans	...	...	2	—	1	—	3	—	1	—
Asiatics	...	...	—	—	2	—	—	—	—	—

The death-rate per 1,000 was 0·037 in 1912-13, as against 0·033 in London and 0·038 in Johannesburg in 1911-12. As in former years, the majority of cases were facial, and about 33 per cent. of the White cases were associated with a visible wound.

MEASLES.

The death-rates per 1,000 were as follow :—

	1909-10	1910-11	1911-12	1912-13
Whites	0·107	0·556	0·185	0·32
Natives	0·090	0·610	0·295	0·60
Eurafricans ... }	0·230	0·830	0·278	0·55
Asiatics				
95 English Towns ...	·031 (1910)	0·47 (1911)	0·47 (1912)	

PLAGUE PREVENTION.

No case of plague occurred during the period under review. The usual precautionary measures were, however, continued. These included the destruction of 22,780 rats, the bacterial examination of 3,391 rat carcasses, the bacterial examination of pneumonia sputum in certain cases, and supervision for ten days of Malays and Indians arriving from plague-infected centres.

PUERPERAL SEPTICÆMIA, ETC.

M.O.H. 1912-13

			1910-11		1911-12		1912-13		Puerperal Septicæmia. Malaria. Leprosy.
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	
Whites	...	...	20	12 (including 1 outside)	12	9 (including 1 outside)	15 (including 1 from outside)	10 (including 2 from outside)	
Natives	...	...	1	1	2	—	2	1	
Eurafricans	...	...	1	1 outside	2	3	1	1	
Asiatics	...	...	—	1	1	1	—	1	

It is probable that the notification of pyæmic and septicæmic states associated with the puerperal period has been very incomplete.

This is, no doubt, in part due to the absence, in many cases, of a definite understanding of what “puerperal septicæmia” connotes. It may, therefore, be well to place it on record that in November, 1898, the Royal College of Physicians resolved that *notifiable puerperal conditions* should be taken to include “septicæmia, pyæmia, septic peritonitis, septic metritis, and other “acute septic inflammations of the pelvis occurring as the direct result of “child-birth.” The Obstetrical Society of London gave a similar ruling in reply to an inquiry by the Society of Medical Officers of Health. The Royal College of Physicians have deleted the term “puerperal fever” from their nomenclature, and substituted such terms as “puerperal pyæmia” or “puerperal septicæmia.”

One of the total of 15 cases reported was brought for treatment into Johannesburg after confinement. Of the 14 cases which arose in Johannesburg, 4 were medically attended during confinement, 5 were looked after by certified nurses or midwives, 3 by unqualified persons, and 2 unattended.

The death-rate from puerperal febrile conditions per 1,000 persons living was 0·035 in London in 1912. In Johannesburg, in 1912-13, it was 0·059. In considering these figures, it should be borne in mind that the birth-rate in Johannesburg was 32·16, against 24·5 for London. It is probably correct to assume that the larger the number of births per 1,000 of population, the greater is the risk of possibility of accident. Moreover, “England and Wales” include large rural areas in which many women lead a very simple, quiet and healthy life, which probably tends to keep child-birth an uncomplicated and normal physiological process.

MALARIA.

Appended are the statistics of this disease :—

			1909-10	1910-11	1911-12	1912-13
			Deaths.	Deaths.	Deaths.	Deaths.
Whites	...	...	6	5	9	—
Natives	...	...	9	6	8	10
Eurafricans	...	...	1	—	—	—
Asiatics	...	...	1	—	1	—

All the above cases were those of persons who had contracted the disease elsewhere, the majority of the coloured cases being East Coast Natives.

LEPROSY.

Three Whites and one Native were notified in 1912-13. One of the Whites was a German who has lived in South Africa since 1891; the second and third cases were sent in to Johannesburg Hospital from Ottoshoop and Witbank respectively suffering from the disease in an advanced stage. The Native case was an East Coast boy.

ANTHRAX.

Anthrax.
Notifiable
Disease.
Disinfecting
Station.
Isolation
Hospital.

This case (a native Mxosa) was sent from a farm in Roodepoort District to Johannesburg Hospital on 25th January, 1913. He had been employed to cut up an infected animal about ten days previously.

NOTIFIABLE INFECTIOUS DISEASES.

These included smallpox, plague, typhus, enteric, scarlet fever, puerperal fever, diphtheria, erysipelas, leprosy, ankylostomiasis, anthrax and phthisis (voluntary).

During the year under notice, 2,309 cases were notified, viz.: 1,680 amongst Whites, 562 amongst Natives, 58 amongst Eurafricans, and 9 amongst Asiatics. These occurrences are discussed elsewhere in this report (see also Table E).

The procedure adopted in regard to notified infectious diseases, disinfection, etc., has been the same as in previous years (see Report 1904-6).

1,840 houses, 26 schools, 3 mine compounds, and 124,815 articles of clothing, bedding, etc., were disinfected; 1 stable was disinfected for glanders, and 1 dairy for anthrax.

DISINFECTING STATION.

This is well-equipped with two modern (Geneste-Herschler) steam-disinfectors, formalin-chamber, baths for "contacts," temporary shelters and ambulance-sheds.

ISOLATION HOSPITAL.

Particulars are appended as to the number, nature, cost, average length and result of isolation of the Johannesburg cases of infectious diseases treated by Dr. Mehliß (1912-13) in the isolation ward at Rietfontein, which, since the abolition of the Rand Provisional Joint Committee, has been administered by the Government:—

	Scarlet Fever.	Measles.	Chickenpox.	Erysipelas.	Diphtheria.	Pemphigus.	Mumps.
WHITES, 1912-13—							
Admissions	114	8	5	1	1	—	—
Recovered	106	8	5	1	1	—	—
Not Discharged	8	—	—	—	—	—	—
COLOURED, 1912-13—							
Admissions	3	10	38	1	2	4	2
Recovered	3	10	38	1	2	4	2
Not Discharged	—	—	—	—	—	—	—

Total Cases:—Whites, 129, with no deaths; Coloured, 60, with no deaths.
Average length of isolation:—Whites, 37·82 days; Coloured, 28·65 days.
Cost per head per day:—Whites, 10s. 6d.; Coloured, 2s.; Total cost, £2,826.
Payments by patients, £660 14s. 9d.; amounts still due by patients, £193 11s.

The Council pays Government 10s. 6d. per day per White patient and 2s. per day per Coloured person. The entire responsibility for treatment rests with Government alone. The accommodation at Rietfontein is admittedly insufficient and, in some respects, unsuitable, and Government is about to erect a new Isolation Hospital within the Municipal Area.

TABLE E.

Monthly Return of Infectious Disease notified in Johannesburg from 1st July, 1912, to 30th June, 1913.

	Race.	Totals.	July, 1912.	Aug., 1912.	Sept., 1912.	Oct., 1912.	Nov., 1912.	Dec., 1912.	Jan., 1913.	Feb., 1913.	Mar., 1913.	April, 1913.	May, 1913.	June, 1913.	NUMBER OF DISTRICT.													Hos- pital.	Non- Resi- dent.	Un- known	TOTAL.	
															I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XII.	XIII.				E.	C.
Smallpox - -	W.	18	...	14	3	...	...	...	...	...	...	...	...	1	4	2	5	...	2	1	...	...	1	...	...	...	2	...	...	1	18	...
	N.	25	1	20	4	...	...	...	...	...	...	...	...	...	5	...	9	...	...	1	...	1	...	...	...	6	...	2	...	...	25	
	E.	37	1	34	2	...	...	...	...	...	...	...	...	...	3	...	26	1	...	2	...	...	...	...	...	5	...	...	...	...	37	
	A.	4	...	4	...	...	...	...	...	...	...	...	...	...	...	...	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4
Typhoid or Enteric Fever	W.	354	...	9	8	18	27	32	63	50	53	40	33	21	31	30	13	25	14	22	28	57	19	9	8	13	12	...	73	...	354	...
	N.	248	15	9	15	10	14	16	22	25	35	37	28	22	5	4	...	2	6	1	6	3	3	133	34	28	...	21	2	...	...	248
	E.	9	...	...	...	...	...	1	1	2	3	2	...	...	1	...	...	2	2	...	1	2	1	...	...	...	...	...	...	...	...	9
	A.	3	...	1	...	1	...	...	...	...	1	...	...	...	1	...	...	2	2	...	...	...	...	...	...	...	...	...	...	...	...	3
Scarlet Fever or Scarla- tina - - -	W.	1,122	28	60	54	108	136	110	86	74	122	107	121	116	44	128	48	34	45	199	214	86	37	29	18	35	203	...	2	...	1,122	...
	N.	2	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	2
	E.	6	...	...	...	...	...	2	2	...	2	...	...	...	2	...	...	...	2	1	...	...	...	...	...	...	1	...	...	...	...	6
	A.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Puerperal Fever or Puer- peral Septicæmia -	W.	15	1	1	1	1	1	...	3	2	...	2	2	1	...	...	1	5	1	3	1	1	...	...	1	...	1	...	1	...	15	...
	N.	2	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	2
	E.	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	1
	A.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Diphtheria - -	W.	81	9	10	10	9	2	10	5	3	6	7	7	3	4	8	2	7	8	4	15	9	12	1	...	...	9	...	2	...	81	...
	N.	5	...	...	...	3	...	...	...	...	1	...	1	...	...	...	...	...	...	...	2	...	...	...	...	2	...	...	...	...	...	5
	E.	3	...	1	...	...	...	...	1	...	...	1	...	...	...	...	...	1	1	...	...	...	...	...	...	1	...	...	...	...	...	3
	A.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Erysipelas - -	W.	43	4	3	6	6	5	5	4	1	4	1	3	1	6	4	5	6	2	9	5	1	1	1	1	1	1	...	...	...	43	...
	N.	36	3	7	1	3	...	6	3	2	3	...	3	5	...	...	...	...	1	1	...	...	...	7	18	9	...	...	...	...	...	36
	E.	1	...	...	...	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
	A.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Leprosy - - -	W.	3	...	...	1	...	...	...	...	...	1	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	2	...	3	...
	N.	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1
	E.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	A.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Phthisis - - -	W.	44	...	2	...	2	...	...	5	10	...	8	...	17	13	5	4	6	1	...	1	1	4	...	...	...	5	...	1	3	44	...
	N.	242	15	16	15	19	20	12	23	13	14	30	32	33	8	3	2	5	2	...	...	...	...	215	1	...	1	...	2	3	...	242
	E.	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
	A.	2	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2
Anthrax - - -	W.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	N.	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1
	E.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	A.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Totals of all Diseases -	W.	1,680	42	99	83	144	171	157	166	140	186	165	166	161	102	177	78	83	73	239	264	155	74	40	28	49	233	...	81	4	1,680	...
	N.	562	35	52	35	35	34	34	50	40	53	68	66	60	18	7	11	7	12	2	9	3	4	357	55	39	7	...	26	5	...	562
	E.	58	2	35	2	...	...	4	4	2	5	3	1	...	6	1	26	4	5	1	3	2	1	...	...	...	9	...	...	...	...	58
	A.	9	...	5	...	1	...	...	...	...	1	2	...	...	1	...	4	1	2	...	...	...	1	...	...	...	...	...	...	...	...	9
TOTALS - -		2,309	79	191	120	180	205	195	220	182	245	238	233	221	127	185	119	95	92	242	276	160	80	397	83	88	249	...	107	9	1,680	629

DISTRICT No. 1 includes that portion of Johannesburg (farm Randjeslaagte) south of the Railway and north of Commissioner Street.
DISTRICT No. 2 includes Braamfontein, Hospital Hill and Hillbrow.
DISTRICT No. 3 includes Marshalls Town and City and Suburban.
DISTRICT No. 4 includes Ferreiras, Fordsburg and Mayfair.
DISTRICT No. 5 includes Newtown, Vrededorp, the Cemetery and the Locations.
DISTRICT No. 6 includes Jeppes, Jeppes Extension, Belgravia, etc.
DISTRICT No. 7 includes Doornfontein, New Doornfontein, Bertrams, Lorentzville, Judith Paarl, Troyeville, Kensington Estate, Bezuidenhout Valley Township and Fairview.

DISTRICT No. 8 includes Berea, Yeoville, Bellevue, Bellevue East, and North-Eastern suburban portion.
DISTRICT No. 9 includes Auckland Park, Richmond, Melville, Newlands, New Clare and North-Western suburban portion.
DISTRICT No. 10 includes Paarls Hoop and Mines from Robinson westwards to boundary.
DISTRICT No. 11 includes Central Mines (from Ferreira to City and Suburban).
DISTRICT No. 12 includes Prospect Town, Denver and the Mines from Meyer and Charlton to Eastern boundary.
DISTRICT No. 13 includes Ophirton, Booyens, Turffontein, Rosettenville, etc. (Southern suburban portion).

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TABLE 2

Monthly Report of Infectious Diseases

Date		Place		Age		Sex		Occupation		Residence		Notes	
1911	Jan	1	1	1	1	1	1	1	1	1	1	1	1
1911	Feb	1	1	1	1	1	1	1	1	1	1	1	1
1911	Mar	1	1	1	1	1	1	1	1	1	1	1	1
1911	Apr	1	1	1	1	1	1	1	1	1	1	1	1
1911	May	1	1	1	1	1	1	1	1	1	1	1	1
1911	Jun	1	1	1	1	1	1	1	1	1	1	1	1
1911	Jul	1	1	1	1	1	1	1	1	1	1	1	1
1911	Aug	1	1	1	1	1	1	1	1	1	1	1	1
1911	Sep	1	1	1	1	1	1	1	1	1	1	1	1
1911	Oct	1	1	1	1	1	1	1	1	1	1	1	1
1911	Nov	1	1	1	1	1	1	1	1	1	1	1	1
1911	Dec	1	1	1	1	1	1	1	1	1	1	1	1
1911	Total	1	1	1	1	1	1	1	1	1	1	1	1



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1911

RECEIVING HOSPITAL.

M.O.H. 1912-13

De Meillon's house, west of the Thoma Brewery in Braamfontein, was kept in readiness for outbreaks of plague or smallpox, but it was not necessary to use it.

Receiving
Hospital.
Ambulance.
Bacterio-
logical
Diagnosis.
Curative
Sera.
Nursing
Homes.
Abattoir.

AMBULANCE EQUIPMENT.

There are two well-fitted modern two-horse ambulances for Whites and a suitable covered four-wheeled vehicle, with stretcher, for Natives. There are also five light-running four-wheeled canvas-covered American vans for removing clothing, contacts, sitting-up patients, etc., and one Cape cart. During the outbreak of smallpox in January-February, 1912, a motor-van for removing infected linen, etc., was purchased at a cost of £470.

During the period under review, 130 White cases and 141 Coloured were removed to Rietfontein by the above transport. In addition, 88 White patients were removed to the Johannesburg Hospital, and transport for 28 lepers to Pretoria was arranged for. A few cases were also removed from outside districts at the request of, and on payment by, the local authorities concerned.

BACTERIOLOGICAL DIAGNOSIS.

The following are particulars of the specimens examined under this heading for the Town Council at the Government Laboratory, Hospital Hill, during the year under review:—

Disease Product.	Positive.	Negative.	Doubtful.
Typhoid	45	72	—
Tuberculosis	38	8	—
Diphtheria	178	344	—
Plague	—	—	—
	261	424	—

These figures do not include rats examined for suspected plague (v. p. 26).

CURATIVE SERA.

The Public Health Committee, on September 15th, 1902, sanctioned an arrangement by which the supply of therapeutic sera is obtained from Messrs. Burroughs, Welcome & Co., of London, and issued at cost price to medical practitioners, or gratuitously in necessitous cases. The amount of serum obtained and distributed between 1st July, 1912, and 30th June, 1913, is as follows:—

<i>Antitoxin.</i>				<i>Phials obtained.</i>	<i>Phials distributed.</i>
Anti-diphtheritic	...	...	...	36	22

NURSING HOMES.

There are 17 registered nursing homes in Johannesburg. These places are inspected and licensed by the Public Health Department.

In January, 1904, the Transvaal Medical Society recommended “that the space requirements for Nursing Homes should be as follows:—(a) for all infectious and all serious operation cases not less than 1,200 cubic feet of free air-space, and 100 sq. feet floor-space; (b) for all other cases not less than 800 cubic feet of free air-space and 75 sq. feet of floor-space.”

PUBLIC ABATTOIR.

The Abattoir was opened on the 24th October, 1910, and, with the Stock Yard and Cattle Market, are under the direction of Mr. J. Irvine Smith, M.R.C.V.S., who has had very considerable experience of meat inspection.

M.O.H. 1912-13

Abattoir.

The following extracts from the Annual Report for 1912-13 of the Director (Mr. James Irvine Smith, M.R.C.V.S.) are of quite exceptional interest:—

Operations during the period under review reveal a sound financial position, a further increase in trade; producers and consumers brought into closer touch with each other, and the adoption of further safeguards with a view to securing a high standard of purity in the meat supplies.

ANIMALS SLAUGHTERED.—Taking the total population of Johannesburg, as per last Government Census, at 237,220, the following statistics show a daily meat consumption of 744 lbs., or approximately $\frac{3}{4}$ lb. per head per day. This figure does not represent the actual consumption per head of Johannesburg population. A large quantity of meat slaughtered here is consumed outside the Municipal Area.

During the period under review, the following animals were slaughtered:—

DESCRIPTION.					NUMBER.	WEIGHT IN LBS.
Cattle	...	...	...	...	72,122	40,905,256
Sheep, Lambs and Goats	...	...	...	...	369,229	13,397,050
Calves	...	...	...	...	3,377	223,949
Pigs	...	...	...	...	31,318	2,417,728
Totals	...	...	...	...	476,046	56,943,983

COMPARATIVE STATEMENT OF ANIMALS SLAUGHTERED AT JOHANNESBURG ABATTOIR.

DESCRIPTION OF ANIMAL.					YEAR 1910-11 (8 months' working)	YEAR 1911-12.	YEAR 1912-13.
Cattle	...	...	...	...	33,782	62,705	72,122
Sheep, Lambs and Goats	...	...	...	...	202,140	361,865	369,229
Calves	...	...	...	...	1,800	3,109	3,377
Pigs	...	...	...	...	19,117	26,057	31,318
Totals	...	...	...	...	256,839	453,736	476,046

FINANCIAL POSITION.

During 1912-13 the Abattoir, with the Live Stock Market, has yielded a nett profit of 10·6 per cent. on the capital invested, in addition to interest, depreciation, redemption and assessment rate.

The profits were thus disposed of:—

Capital Expenditure, Abattoir and Live Stock Market ...	£5,200 15 2
Contribution towards Relief of Rates ...	4,921 7 8

The Abattoir, with a capital of £72,624, yields a nett profit of £6,441, and the Live Stock Market, with a capital outlay of £22,292, yields a nett profit of £3,682.

On the instruction of the Council, the price of fertilisers produced at the By-product Plant was regulated so as to cover working expenses and capital charges. The Council was guided in its decision on this point by the fact that the fertilisers are manufactured from seized, condemned and waste material.

The following statement shows total revenue and expenditure, also cost of production:—

Rovenue from By-Products	...	...	£2,074 3 11
Market Valuation of Stock on Hand at 30th June, 1913	...	...	697 6 10
Expenditure	...	...	£2,771 10 9
Profit	...	...	2,618 15 4
			£152 15 5

The cost of production of By-Products was:—

154,252 lbs. of Tallow cost	...	...	£1,297 15 9
Rato per lb. = 2·0193d.			
286,637 lbs. of Meat and Bone Meal cost	...	...	1,072 0 3
Rato per lb. = ·8976d.			
Rate per 2,000 lb. ton = £7 9s. 7d.			
73,303 lbs. of Blood Meal cost	...	...	248 19 4
Rate per lb = ·8152d.			
Rate per 2,000 lb. ton = £6 15s. 10d.			

These products were sold at the following rate:—

Meat and Bone Meal—£7 10s. per ton of 2,000 lbs.
 Blood Meal—£7 10s. per ton of 2,000 lbs.
 Tallow (Light)—2½d. per lb.
 Tallow (Dark)—2½d. per lb.

Abattoir.

A total of 957 tons of condemned and waste material was converted into 154,252 lbs. Tallow and 286,637 lbs. Fertiliser; 67,225 gallons of blood was converted into 73,303 lbs. of Blood Fertiliser.

From the above, it will be seen that the Live Stock Market is the only real trading branch in this Department, and, as such, yields a generous profit.

TUBERCULOSIS.—The following table shows the number of carcasses found to be infected with tuberculosis:—

Cattle.—Cattle slaughtered, 72,122; cases found, 94; percentage, .130.
Pigs.—Pigs slaughtered, 31,318; cases found, 313; percentage, .967.
Sheep.—Sheep slaughtered, 369,229; cases found, nil.

The above figures reveal that tuberculosis is gradually on the increase.

Fifty years ago no one recognised tuberculosis as a contagious disease. Heredity was assumed to be the great cause of its spread. This serious error was first corrected by Bang, a Danish veterinarian, who has proved beyond dispute that contagion and not heredity is the factor in spreading tuberculosis. It is clear that the prevention of human tuberculosis of bovine origin cannot be separated from the prevention of tuberculosis amongst bovine animals, and that no steps can be permanently satisfactory unless they definitely aim at a diminution of the total bulk of bovine tuberculosis. The benefit to be derived from this diminution will be very considerable.

MICROSCOPICAL EXAMINATION.—Microscopic examinations of other parts of pig carcasses showing localised tuberculosis continue to be carried out, with the object of ascertaining whether the disease exists in the remainder of the carcass.

CYSTICERCUS BOVIS.—As formerly, cysticercus infestation was the principal disease rendering carcasses unfit for food. It will be observed that of 72,122 cattle slaughtered, 601 cases were found to be infested—a percentage of .83.

CYSTICERCUS CELLULOSÆ.—During the year 31,318 pigs were slaughtered, and of these 3,596 had cysticercus cellulossæ infestation—a percentage of 11.482.

EMACIATION AND DROPSY.—The prolonged drought during 1912-13 caused a considerable amount of extreme emaciation, 295 cattle being condemned for this disease. Out of 369,229 sheep slaughtered, 1,532 were condemned for extreme emaciation and dropsy.

ECHINOCOCCI INFESTATIONS.—14,005 sheep plucks, 21,184 sheep lungs, 2,475 ox plucks and 4,867 ox lungs were condemned for this disease.

MEAT INSPECTION.—In order to assist inspection of meat brought into the Municipal Area being properly enforced, it is necessary for the intermaxillary and throat glands to be left *in situ*, and it is proposed to forward a draft By-law to cover this condition for the Council's consideration at an early date.

SAUSAGES AND PIECES OF MEAT IMPORTED BY ROAD OR RAIL.—The following meat inspection procedure is adopted for sausages, polonies, pieces of meat, such as fillets, kidneys, etc., imported into the Municipal Area by road or rail:—The Railway have instructions to forward the consignment direct either to the Dead Meat Dépôt or by trolley to the Abattoir, where it is subjected to the usual course of inspection. In the case of sausages or polonies, one is taken from each consignment for the purpose of microscopical examination. Consignors of bacon and hams are requested to forward the names of firms to whom they consign same, so as to enable an inspection to be carried out.

MICROSCOPICAL WORK.—A considerable amount of microscopical work has been done. It has been found that this important work is greatly hampered owing to inadequate and unsuitable accommodation. A laboratory has been included in the draft plan for the new offices, which will be submitted for the Council's consideration at an early date.

COLD STORAGE.—The question of the installation of cold storage at the Abattoir still remains in abeyance. The establishment of cold storage works enables the farmer to develop the meat and mutton industry, and the development of the cattle and meat trade in Johannesburg will be retarded so long as facilities of cooling rooms are denied.

REFRIGERATION TRUCKS.—The condition of the refrigeration trucks on the Railway still remains unsatisfactory, and it is impossible to conduct the dead meat trade with satisfaction if those who control the chief transit routes remain unmoved as to the absolute necessity for improvement of refrigerating trucks and the maintenance of a controlled temperature during transit.

DWINDLING MEAT IMPORTATIONS.—Every year shows an increase in the number of live stock slaughtered, and a corresponding dwindling in the quantities of frozen and chilled meat imported.

MEAT FROM KOMGHA DISTRICT.—Consignments of meat were received from Komgha District. The carcasses were emaciated, dropsical and badly handled, and showed evidence of indifferent dressing. Whatever inspection was made at the time of slaughter could only have been of a most perfunctory character.

RECIPROCITY IN ACCEPTANCE OF MEAT STAMP.—On the 20th of March, 1913, the Public Health Committee resolved as follows:—

“When any Municipality, having the power to enforce meat inspection charges, agrees to admit into its Municipal Area, free of charge, butchers' meat bearing the Johannesburg Meat Stamp, the Johannesburg Municipality will reciprocate by admitting, free of charge, all butchers' meat into the Johannesburg Municipal Area bearing the stamp of the Municipality concerned; both Municipalities retaining the right to stamp and subject such meat to any further inspection they may think fit.”

M.O.H. 1912-13

Abattoir.
Milk Supply.

MEAT SUPPLIES OF THE WORLD—PRESENT AND PROSPECTIVE.

The following items of information, culled from various official reports and records, are instructive in showing the vast opportunities open to this country in the way of exportation of frozen meat to the European markets:—

AMERICA.—The steady and enormous growth of the American population, owing mainly to immigration from Europe, is gradually converting this important meat-exporting country into a meat-importing one. In fact, cargoes of chilled meat have actually been forwarded to the United States from the Argentine and Australia.

Not only does this apply to the United States, but also with equal force to Canada, which, some seven years ago, exported large supplies of cattle and hog products. From 1902 to the present year shipments of meat have steadily declined, and the population of Canada now consumes the whole production she is raising, and will soon be in a position to draw supplies from other countries.

ARGENTINE.—The value of cattle in the Argentine has gone up during the last three years nearly 100 per cent., and there are indications that this country, with its overwhelming meat supplies, will be unable in the near future to meet the normal demands from the United Kingdom, in addition to the increasing demands from the United States.

JAPAN.—Another country which is rapidly acquiring the meat-eating habit is Japan, their Army and Navy being now supplied with meat rations, and this factor will also affect the Argentine supplies.

NEW ZEALAND AND AUSTRALIA.—New Zealand and Australia will undoubtedly benefit by the shortage in the Argentine, and the United States, as previously mentioned, is already drawing supplies from those countries. The Australian and New Zealand export trade in mutton and beef to the United Kingdom is on the increase.

CHINA AND MANCHURIA.—China and Manchuria are progressing rapidly in raising hogs, and large shipments of frozen pork, bacon and hams are being exported to Great Britain. The enormous cost of freight, transportation and refrigeration, however, operates against this trade.

DENMARK.—Denmark supplies 40,000 hogs per week to the United Kingdom, but it is considered that she has reached her limit.

GERMANY, ITALY AND FRANCE.—Germany, Italy and France have all received experimental consignments of frozen meat, and, owing to the "dear meat" cry, their demands for imported meat will increase in future.

During the five years, 1906-10, the United Kingdom imported 28 lbs. of fresh meat per head of the population, or, in other words, 40 per cent. of its requirements.

With the advance of civilisation and increased populations, other countries are finding that they require for their own consumption increasing quantities of meat, with the result that they have less to export. The shrinkage of the amount available from foreign countries is creating an overwhelming deficiency. The day is approaching when South Africa must find an outlet for its surplus live stock, and, by the aid of refrigeration, fresh meat can be landed in Europe for consumption all the year round.

In view of the facts enumerated above, it is important to consider how far South Africa can benefit from this enormous and permanent industry. There are large tracts of land in South Africa admirably adapted for raising cattle and hogs, and every endeavour should be made to direct attention in this direction.

To sum up the position, the consumptive demands of the world have overtaken the supply of beef, mutton, pork and their products, and a steady advance in the value of cattle, sheep and hog products may be expected in the future.

MILK SUPPLY.

COWSHEDS AND MILKSHOPS.

305 cowsheds and milkshops are licensed and, as far as practicable, kept under observation.

During the six months, January-June, 1913, the Acting Assistant Medical Officer of Health (Dr. Pratt Johnson) prepared, under the supervision of the Medical Officer of Health, a very detailed, comprehensive and exhaustive "Report on the Conditions of Milk Production in and around Johannesburg." This report has been separately printed and circulated, but, for general information, it is thought advisable to reproduce the Medical Officer of Health's Introductory Summary, etc., thereto:—

As the Committee has long been aware, the situation and condition of many of the existing cowsheds, and, in some instances, the *personnel* of the licensees, have combined to create in Johannesburg, as in most other places, a state of affairs, in regard to the milk supply, which is the reverse of satisfactory. The Local Government Ordinance, 1912, gazetted on November 8th, 1912, purports, however, to confer on the Council wider and much-needed powers in this respect, and, in view of the expiration on the 31st December, 1912, of the then existing licences, the Medical Officer of Health felt that before deciding as to renewals, and before submitting new applications, a systematic medical inspection should be carried through. Accordingly, in December, 1912, the Medical Officer of Health requested the Acting Assistant Medical Officer of Health to undertake this work on systematic lines generally indicated by the Medical Officer of Health. As there are now some 305 licensed cowsheds within the Municipal Area, and, in addition, 44 other cowsheds outside the limits but within twenty miles of Johannesburg, the task of detailed systematic inspection has been a very arduous one, and has only recently been completed.

The first point to be noted is that the average daily fresh milk supply of Johannesburg is estimated at (say) 8,200 gallons. Of this, some 1,600 gallons (or 19 per cent.) are sent in by rail, whilst 620 gallons (or 7·5 per cent.) come by road, the remaining 73·5 per cent., or nearly three-quarters of the whole, being produced within the Municipal Area. This is a significant fact for the consideration of those who contend that because it is very difficult to supervise outside dairies, it is unfair, if not absurd, to exact a high standard in respect of those which can be controlled.

M.O.H. 1912-13
Milk Supply.

With reference to the "locality" of the 305 dairies in Johannesburg, no less than 93 (stalling altogether 2,000 cows) are situated in congested residential districts, and are consequently an inevitable cause of frequent complaint by neighbours and ratepayers' associations. As Dr. Johnson points out, this is no doubt largely due to the phenomenally rapid growth of Johannesburg. The recent Local Government Ordinance purports to empower the Council to deal with this evil, and an attempt has been made to do so—in the case of L. Weinbrenn—the result of which will be of much interest and importance.†

With regard to "Inspection of Dairies," the fact is emphasised that the standard adopted has not been any fanciful or capricious ideal, but is based, with due allowance for local conditions, upon the recommendations of the English Board of Agriculture and Fisheries, as published in Leaflet No. 241 of September, 1911, on "The Construction of Cowsheds." It has also been generally approved by Mr. E. O. Challis, the Dairy Expert of the Union Government.

The results of this inspection, as summarised by Dr. Pratt Johnson (*vide* page 21) in his "Classification of Dairies," amply justify the labour of this inquiry, and demonstrate the necessity for sustained measures of reform. Of 270 cowsheds licensed within the Municipal Area on 1st January, 1913, only 2 (or 0·7 per cent.) are classed as "very good," 16 (or 5·6 per cent.) are "good," 166 (or 61·4 per cent.) are "fair," while 67 (or 24·8 per cent.) are "bad," and 19 (or 7·0 per cent.) "very bad." As regards some principal attributes of a good dairy or cowshed, 12 were, in the matter of site, crowded in each case on a stand 50ft. x 50ft., on each of which there was also a dwelling-house with its out-offices. In 49 cases (16 per cent.) the water supply was unsatisfactory. In 74 cases, both town-water (which is good) and well-water (which is liable to pollution) are available, but the water-card showed that in one instance no town-water, and, in another, that very little town-water, had been used for several months—an effort at economy both dangerous and very difficult to cope with. In 21 cases there were no milk rooms, and in 240 cases (or 78·7 per cent.) the milk rooms were not fly-proof. About 75·4 per cent. were without any means of sterilising their bottles, except the familiar paraffin-tin of water heated on the kitchen stove. In only three cases were overalls used by the milkers, and at these three cowsheds the cows were groomed daily and their teats washed. On the other hand, the Acting Assistant Medical Officer of Health "has frequently seen the actual milking of a cow the flanks of which were caked with old dried manure." Forty per cent. of the licensees have regular occupation elsewhere during the day, "leaving the conduct of the dairy, in some cases, to their Kaffirs." Complaints of nuisance have been lodged against 17·4 per cent. of licensees, and at various times 6 per cent. have been convicted of one or more breaches of the By-laws.

As regards the 44 dairies inspected outside your Area, none were rated as "very good," 31·8 per cent. were classed as "good," 31·8 per cent. as "fair," and 31·8 per cent. as "very bad." The cowsheds are frequently of the poorest description, 52 per cent. being described as "dilapidated"; lighting and ventilation are usually "conspicuous by their absence," floors "disgracefully dirty and offensive," a properly-constructed impervious floor being "a distinct rarity." Decent milk rooms are also rare (11 per cent.), and efficient fly-screening still rarer (3 per cent.). Cleansing—not to speak of scalding—of utensils is attempted by Kaffirs "in the crudest way possible." "In one case, the boy was found washing a heap of some 60 bottles piled into a large bath. The water was lukewarm, but so scanty in amount that the last bottles washed were almost as much fouled as cleansed by it." Indeed, the question of water supply of outside dairies is probably of all defects both the most serious and the most difficult to remedy. In 70 per cent. of cases it is derived from unprotected shallow wells or springs, and, apart from its impurity, frequently quite insufficient. One dairyman carries water for four miles in a large can fixed to his bicycle. In another case, a dead fowl, and in yet another, a dead rat, were observed in the source of the dairy's supply.

Milk is frequently sent in by rail in tins which are merely fastened by wire, and in one case of "watering" the excuse was pleaded that the contents were tampered with *en route*. The secure locking of such receptacles must therefore, if possible, be enforced.

The question of "cooling" milk to about 50° F. as soon as possible after it is drawn, and of the validity or otherwise of the local prejudices against this precaution, are discussed in some detail at p. 15. In only 9 per cent. of dairies within your boundaries is a cooler used, though amongst the outside dairies it is employed in 20 per cent. of the premises inspected. While there can be no doubt as to its value where strict cleanliness is exercised and an ample supply of clean water is available, it is also clear that a cooler may be useless or worse, unless these conditions are complied with; for obviously a cooler that is exposed to dust and not scrupulously cleaned before and after use, will so contaminate the milk passed over it that its last state will be worse than its first. It is, therefore, thought that, for the present, and till considerable improvement and education have been effected in local methods of dairying, the provision of a cooler should be optional; but that, in any future Municipal classification of dairies and market milks, its use under satisfactory conditions should be a *sine qua non* for an official certificate.

† On 2nd July, 1913, the Council's action in refusing Mr. Weinbrenn a licence was upheld by the Resident Magistrate's judgment.

In both Washington and New York, as the Health Committee is aware, the Board of Health has undertaken, both for the protection of the public and of the honest up-to-date dairymen, a system of classification of milk under the headings of "certified milk," "inspected milk" and "pasteurized milk." In America, this classification is largely based upon the results of a system of periodical "card-inspection" of dairies (*vide* p. 20), wherein marks are assigned for each of the various attributes of a well-ordered dairy, *e.g.*, structure, cleanliness, water supply, etc. The Transvaal Local Government Ordinance, 1912, purports to empower the Council " to certify the quality of any milk, and to prohibit the unauthorised use of any terms employed by the Council in denoting such quality," and it is thought that the time has come to attempt card-inspection and official classification in Johannesburg.

Although quite aware that the reference may be resented in the quarters concerned, the Medical Officer of Health feels it his duty to call attention to the fact that a material proportion of the milk-production of Johannesburg is in the hands of low-class Eastern Europeans, who, presumably by reason of their early environment and want of education, have absolutely no idea of the meaning of the word "cleanliness" as applied to milk-production, nor, in some cases, as applied to their persons and dwellings. In the past, some of them have been enabled to start dairying through the kindly but misdirected help of a well-known charity organisation, which, however, has received, with every courtesy and promise of future co-operation, recent representations on the subject by the Medical Officer of Health. Sixteen (or 86 per cent.) of the 19 "very bad" dairies and 36 (or 53 per cent.) of the 67 "bad" dairies are run by persons of, or similar to, this class, who are wholly unreliable in their statements and absolutely unfit to be engaged in the milk trade, which, moreover, they usually tack on to other occupations. And not merely such people as those above referred to, but many others, appear to regard dairy-keeping as a remunerative business in which anyone can engage, in which cows, a Kaffir or two, bottles and some kind of shed have certainly to be provided, but in which the risk of cowdung in milk may be disregarded, while the enforcement of any expenditure or effort for the clean and decent conduct of the business and protection of customers is unnecessary and tyrannous. It is often impossible to justify legally the refusal of a licence to such persons, and, though one knows their instincts, it is equally impracticable to supervise each of them constantly. Now, the average member of the Public will not or cannot satisfy himself about the origin of his milk, and therefore the only really effective remedy seems to the Medical Officer of Health to lie in some system of well-organised and self-supervised co-operation such as exists in Denmark, or, failing that, in a large measure of municipalisation of the milk trade, for a pure milk-supply is hardly less important than a pure water-supply. Apart, however, from its undoubted Public Health advantages, the question of municipalisation bristles with financial and politico-social considerations and difficulties which it is hardly within the province of this Report to discuss.

It is recommended:—

- (1) That, as soon as it is practicable, the Council's By-laws relating to "Dairies and Milk Shops" be revised and extended, especially in the following respects:—
 - (a) To provide for licensing and regulating, for any period not exceeding twelve months, of purveyors of milk, and for similarly licensing and regulating dairies, milk shops, and every cowshed in which one or more milch cows is or are kept. The revision should include more accurate specification in regard to structure of premises, water supply, milk rooms, wash rooms, cleansing and sterilising apparatus, and the number of animals permissible.
 - (b) For prescribing the conditions subject to compliance with which any milk or milk-products produced or prepared within or outside the Municipality may be distributed, stored, sold or used within the Municipality, and for prohibiting the introduction, etc., of milk or milk-products in respect of which such conditions are not complied with. The conditions as regards outside dairies should be generally similar to those required for dairies within the Municipal Area, and should provide for the satisfactory nature and locking of the receptacles in which milk is forwarded.
 - (c) For prohibiting the sale of tuberculous milk, and for providing for veterinary inspection of milch cows.
- (2) That until considerable improvement and education have been effected in local methods of dairying, the provision of a cooler be optional; but that in any future official classification of dairies and market milk, the use of a cooler, under satisfactory conditions, be a *sine qua non* for an official certificate.
- (3) That a system of "card-inspection" of dairies and a system of "classification of market milks" (such as exists in Washington and New York) be instituted, and for this purpose three special dairy inspectors be appointed, on the same terms as sanitary inspectors.
- (4) That, in view of the power which the Council is now believed to possess to refuse licences in unsuitable localities and to undesirable persons, particular circumspection be exercised in future in regard to the nature of the locality and the personal fitness of applicants for dairy licences.
- (5) That the practicability of encouraging the establishment of a well-organised and self-supervised system of co-operation amongst dairy farmers, or, in the alternative, the practicability of a large measure of municipalisation of the milk trade, be considered.

Milk Supply
and
Analysis.
Inspection of
Foodstuffs.

In January, 1913, the recommendation made in notices from this office to “boil milk for five minutes” was criticised, with some reason, on the ground that it might be construed by most persons to mean that the milk should be left untended on the fire for five minutes after it has reached the boiling-point, when (with an ordinary saucepan) it would naturally boil over.

In future notices the advice will be to “keep the milk at boiling-point for “five minutes, taking care that it does not boil over.”

As the boiling-point of milk is not stated in any text-book, the Government Bacteriologist (Dr. Watkins Pitchford) kindly determined it, at the request of the Medical Officer of Health, with an ordinary sample of milk. It is 94° C. (201·2° F.), and was exactly the same for a check sample of water which was boiled at the same time. Dr. Pitchford further advised that exposure of milk to 60° C. (140° F.) for ten minutes will kill all ordinary bacilli, including those of enteric and diphtheria, but not including those of tuberculosis. A temperature of 75° C. (167° F.) for fifteen minutes, or 94° C. (201·2° F.)—boiling-point—for a few seconds will kill all ordinary bacilli, including tubercle.

These temperatures for the periods stated are, therefore, sufficient for milk which is going to be used at once, but will not, however, kill certain spores which may subsequently mature and cause souring of the milk. They are, therefore, not sufficient for milk which is to be kept for any considerable time before consumption, and which should be kept at boiling-point for five minutes.

With regard to the use of the various kinds of jacketed milk-saucepan with perforated diaphragm on the market, it may fairly be taken that as the boiling-point of milk and the boiling-point of water are identical, the milk in the inner vessel will attain boiling-point if kept there for sufficient time, and the use of such a utensil is probably safer from a practical point of view when the sterilisation of the milk is being carried out by a native or by an unreliable white person.

MILK ANALYSIS.

Appended is a tabulated summary of the results of analyses and prosecutions :—

	1906 7	1907-8	1908 9	1909-10	1910-11	1911-12	1912-13
No. of Samples taken... ..	235	264	244	342	292	311	375
No. examined bacterially ...	—	—	—	—	—	23 (all negative)	70 (69 negative)
No. deficient Solids not Fat...	31	33	27	11	3	7	6
No. do. Fat ...	5	7	3	15	5	2	4
No. with Preservatives ...	4	—	—	—	—	—	—
No. of Prosecutions	15	7	6	7	6	6	13
Amount of Fines	£105	£ 5	£22	£45/10/	£14	£30	£78

INSPECTION OF FOODSTUFFS.

The following goods were condemned by the Food and Drugs Inspector :—
Fish, 990 cases and 8,320 lbs. ; fruit, 1 case and 120 lbs. ; hams, 850 lbs. ; bacon, 3 cases ; milk, 26 cases : peas, 7 cases and 1,000 tins ; sausages, 7 cases ; tinned fowls, 10 cases ; eggs, 24 dozen ; and buck, 13.

A special inspector examines foodstuffs arriving at the Kazerne.

During the period under review he passed 1,186,613 lbs. of bacon, etc., 7,521,848 lbs. of fish, and 38,177 lbs. poultry.

He condemned 104,866 lbs. and 605 boxes fish, 25 boxes haddocks, 140 lbs. olives, 55 lbs. crayfish, and 2 buck.

For method of inspection of sausages, fillets, kidneys, etc., brought in by road or rail, see extract from Report of Director of Abattoirs at p.31 hereof.

ANALYSIS OF FOODS, 1912-13.

Analysis
of Foods.
Water
Supply.

In addition to the 316 water examinations (see page 37), some 486 articles of food were examined during 1912-13 at the Government Laboratories. Details are appended:—

Number and Description	Genuine or Pure.	Adulterated or Impure.	Doubtful.
375 Milk	364	11	—
82 Butter	80	2	—
8 Margarine	8	—	—
1 Salt	1	—	—
10 Coffee (for chicory) ...	10	—	—
10 Tinned Peas	10	—	—

This gives an average of 486 samples per year, or 3626 per annum per 1,000 of the white population, as compared with 5·3 per 1,000 in 1907 of the population (1901 census) in London, and 2·5 in the English Provinces.† Formerly it was understood by the Local Government Board of England that one sample per 1,000 of the population should be aimed at; but, as will be seen from the above, this figure is considerably exceeded at the present time. The English Board of Agriculture tries to encourage the taking of three per 1,000, and divide these amongst milk, butter and cheese.*

WATER SUPPLY.

The various sources from which the town's supply is drawn have been detailed in previous reports, and are at present shortly as follow:—

- (1) About three-fifths of the daily supply is from deep wells in the dolomite at Zuurbekom, 18 miles west of Johannesburg. This water is of exceptional purity.
- (2) About 250,000 gallons altogether is obtained from—
 - (a) Two boreholes in the Lower Witwatersrand Beds in Ellis Park.
 - (b) Two boreholes in hard shale in Staib Street, Doornfontein.
 - (c) Two wells sunk in weathered slates through a track of alluvium in Braamfontein, east of Auckland Park.
- (3) The remainder is from Zwaartkopjes (Klip River Valley), from wells in dolomite, with some admixture of surface water. This water has for the past six years been treated with chlorinated lime, in the proportion of 13 lbs. (with guaranteed minimum of 30 per cent. available chlorine) to one million gallons, or about 3·9 parts chlorine per million. The result has been satisfactory, and no complaints have been received.

The length of mains within the Municipal Area is now 345·07 miles, no less than 7·59 miles having been added during 1912-13, while during the same period 856,101,400 gallons of water were supplied to consumers connected to same. These figures show an increase over any former year. The draw-off from the Yeoville service reservoir has been very varied, and at times, when only a few inches have been left, has caused considerable anxiety. The Board has recently somewhat augmented its local sources of supply, and an important scheme is now being promoted for pumping water from the Vaal, between Vereeniging and Parys.

ZWAARTKOPJES.—The water from the western series of wells at Zwaartkopjes has been satisfactory, but, as in previous years, the bacterial content of the water from the southern section has varied considerably.

† "Sale of Food and Drugs"—Extracts from Annual Report of Local Government Board (England), 1907-1908.

* Letter to M.O.H., dated 9th September, 1909, from "Department of Inspector of Foods" of Local Government Board (England).

The chloride of lime process for sterilising water at Zwaartkopjes has been continued, and the results are satisfactory. M.O.H. 1912-13.

The softening process has been abandoned, as it was almost useless, and, pending the introduction of a new scheme, the unsoftened water is being supplied. Water Supply. Aerated Water and Ice Factories. Sewerage. Intakes.

CHEMICAL AND BACTERIOLOGICAL EXAMINATIONS.

316 Samples of water were taken for examination during the year 1912-13, namely, 113 chemical and 203 bacteriological.

AERATED WATER AND ICE FACTORIES.

The By-laws for the regulation of these trades, which were gazetted on the 6th April, 1906, continue to work well.

SEWERAGE.

The Town Engineer has kindly supplied the following information:—

On 30th June, 1913, there were 79·12 miles of sewers completed, chiefly in the following districts:—Johannesburg (south of Railway), Braamfontein, Ferreira's, Fordsburg, Marshallstown, City and Suburban, Doornfontein, New Doornfontein (south of Railway), Hillbrow (south of the Hospital Hill side) and the Malay Location.

On the same date, 7,429 premises had been connected.

Owing to the torrential seasonal rains, the “Separate System” has been adopted, *i.e.*, surface and storm waters are excluded from the sewers, and carried off in separate culverts and pipes, the latter often being laid in the same trench as, but above, the sewers.

NIGHT SOIL AND SLOPWATER INTAKES.

There are eight “intakes,” at which night soil and slopwater are turned into the sewer. Their design is, in the opinion of the Medical Officer of Health, exceptionally good. Particulars are appended of the daily work done by each intake between 1st July, 1912, and 30th June, 1913:—

Intake at	Used since	Approx. average quantities disposed of daily.			
		Nightsoil.	Urine.	Slopwater.	Clean Water for Flushing purposes.
Main Compound ...	Nov. 14th, 1908 ...	6,319	1,616	20,800	18,000
Natal Spruit ...	Jan. 19th. 1909 ...	5,042	1,941	89,200	12,000
Springfield ...	May 25th, 1909 ...	3,990	1,027	—	12,000
Wolhuter ...	April 26th, 1909 ...	4,357	2,024	22,400	6,650
Shanks Street ...	August, 1907 ...	—	2,800	4,000	600
Gaol ...	Before the War ...	—	—	67,600	1,000
Ophirton ...	May 18th, 1908 ...	—	—	6,800	—
Bezuidenhout Valley ...	October 6th. 1911 ...	1,908	—	14,000	10,000
Totals ...		21,616	9,408	224,800	60,250

Total Gallonage daily—all kinds—316,074.

Serious complaint has been made of smell-nuisance from the Wolhuter Intake by Mr. Bleksley, Superintendent of the neighbouring Training School for Miners.

SEWAGE DISPOSAL.

Sewage
Disposal.
Mines
Sanitation.

This question was dealt with in detail at pp. 48-9 of the Medical Officer of Health's Report for triennium 1906-9. It was there stated that in a Joint Report (dated 26th August, 1909) by the Town Engineer and Medical Officer of Health, a number of very important recommendations were made as to the future management of the farm. Those recommendations were accepted, and have been conscientiously carried out by the Council. The sewage is now screened, treated in a detritus tank and in continuous sedimentation tanks, and thereafter irrigated upon land laid out in such a manner that a considerable interval of rest usually elapses between each period of irrigation of any one particular area. The length of carriers is now 34 miles, and the maximum irrigable area is 790 acres. The average daily flow of sewage was about one and a half million gallons.

Sludge Disposal is by burial in suitable trenches.

MINES SANITATION.

In January, 1904, the Council, on the advice of the Medical Officer of Health, appointed a special and highly qualified inspector (Mr. A. Cowie) for mine sanitation work, this being the first appointment of the kind recorded in any British mining community. Mr. Cowie has since worked tactfully and steadily, and the excellent and beneficial character of his work may probably claim a share in the reduction of the death-rate amongst native miners. On matters relating to surface sanitation, Mr. Cowie reports directly to the Medical Officer of Health, Johannesburg. As regards underground sanitation, he works, by arrangement agreeable to the mines and all concerned, as an official of the Mines Department, and reports to the Government Mining Engineer, who transmits a copy to the Medical Officer of Health, Johannesburg. A copy of every report is sent to the Chamber of Mines, the Mine Manager and Doctor, the Mines Department, the Native Affairs Department, the Medical Inspector of Mines, and the Governor-General.

In January, 1909, Mr. R. Beattie, a District Inspector in this Department, was appointed Assistant Mines Sanitation Inspector, and, in collaboration with Mr. Cowie, is doing excellent work. In August, 1912, a second Assistant Inspector, Mr. E. W. Clarkson, was appointed.

Attached is the Mine Sanitation Report for 1912-13:—

27th September, 1913.

The Medical Officer of Health,
Johannesburg.

Sir,

In accordance with your instructions, I have the honour to submit the following general statement regarding the work of Mines Sanitation Inspection for the year ending 30th June, 1913.

During the year the usual procedure of systematic mine-to-mine inspection, in regard to both surface and underground sanitation, has been steadily pursued under your direction.

As regards Surface Sanitation, this work comprised a close inspection of the native compounds, locations, hospitals and eating houses, contractors' compounds, power stations, white and native change houses, mine boarding houses, married and single white quarters, the sanitary arrangements at the various works, the disposal of refuse, and generally the scavenging of the whole of the surface.

In connection with Underground Sanitation, attention has been paid to securing and maintaining suitable, sufficient and conveniently accessible latrine accommodation on the various working levels, and an efficient system of scavenging at and around all sanitary conveniences and throughout the underground workings generally.

On the completion of an inspection of a mine a detailed report on the sanitary conditions and arrangements prevailing thereat was submitted to and dealt with by you, and the necessary re-inspections were subsequently made, with a view to having all reported sanitary defects duly remedied in accordance with specified requirements of the Department.

As usual, the Government Mining Engineer and the Director of Native Labour have been kept in close touch with all steps taken by the Public Health Department in connection with Mines Sanitation, and all matters raised by the Government Departments have received careful attention.

In the period under review, as you are aware, considerable structural and other improvements have been carried out, as well as a large amount of repair work and abatement of nuisances. As fully recorded in weekly and other special reports, several compounds, and the sanitary conveniences in connection therewith, have been generally overhauled and improved, and, in one instance, complete reconstruc-

tion was carried out. Scavenging has received particular attention, and improvements have been effected at several properties in the way of the provision of approved types of refuse bins with covers. More care has been exercised in keeping refuse dumps reasonably tidy and free from nuisance. Drainage arrangements for the conveyance of waste-water and urine from compound yards have been improved, and a suitable spraying apparatus provided and used to secure thorough and effective disinfection and lime-washing of the internal surfaces of native quarters, latrines, etc. Some attempt has been made to provide cross-ventilation for back-to-back living rooms at the single men's quarters, as called for under the Mining Regulations. The provision of a special type of sanitary bucket, with close-fitting cover, to prevent spillage underground during removal of buckets to the surface, is now practically universal on the mines within the district. Licensed premises, such as Kaffir eating houses, mine boarding houses, etc., have been closely inspected, and generally fairly satisfactory conditions, as to cleanliness and meat supply, have been maintained.

M.O.H. 1912-13

Mines
Sanitation.
Scavenging
Services and
Death-rate
of Mine
Natives.

Reviewing the year's work as a whole, there is ample evidence to show that the progressive sanitary improvement manifested in past years has been steadily maintained during the year, and undoubtedly this advancement has been secured in no small degree by the opportunities afforded for more regular and frequent inspections through the appointment of an additional Inspector, Mr. E. W. Clarkson, in August, 1912. It must also be stated that Mine Managers have invariably extended every assistance and facility to your Inspectors in the prosecution of their investigations and inspections, both on the surface and underground, and, irrespective of cost, all reasonable requirements and recommendations put forward have, as a rule, been at once carefully considered and acted upon by the mine authorities with genuine desire to improve sanitary and health conditions for their employees.

There is, however, as generally recognised, one direction in which a decided improvement could be effected, and that is by connecting up the various properties, where possible, with the public sewer. In this way, the (at times) almost unavoidable nuisances which arise from smell and flies caused or encouraged by the discharge of waste-water and the large collections of open sanitary buckets would practically disappear.

At one or two mines septic tank installations have been, or are being, laid down, but the creation along the thickly-populated Reef of a number of sewage disposal plants, which depend so much on careful and special management in order to secure proper working conditions and freedom from smell-nuisance, cannot be considered as satisfactory as the discharge of all sewage direct to the more suitably situated public outfall works.

In conclusion, I beg to record the excellent and energetic work of the Assistant Mines Sanitation Inspectors, Messrs. Beattie and Clarkson.

I have the honour to be, Sir,

Your obedient servant,

ALEXANDER COWIE,

Mines Sanitation Inspector.

A code of "*Recommendations in regard to Underground Sanitation*" was drawn up in this office in 1910, and suitably circulated. In 1913 a similar *resumé* re "*Surface Sanitation*" was prepared and issued in pamphlet form.

SCAVENGING SERVICES AND THE DEATH-RATE AMONGST MINE LABOURERS.

On 29th May, 1913, the Public Health Committee instructed the Medical Officer of Health to report (1) whether there is any ground for believing or stating that the Municipal Sanitary Services are defective, filthy or dangerous, and cause excessive death-rate amongst native mine labourers within the Municipal Area; and (2) what proportion of sanitation on the mines would be continued to be done by the pail system, even after the mine properties were connected to the water-borne system of sewage?

Pursuant hereto, the Medical Officer of Health reported on 16th June, 1913, as follows:—

- (1) In the case of the mines, "The Municipal Sanitary Services" are limited to night-soil disposal. The removal of garbage and the disposal of slop-water are undertaken by the mines themselves.

The first question to be answered is whether there is any ground for believing or stating that the night-soil disposal service is defective, filthy or dangerous?

Night-soil disposal on the majority of the mines is effected—as in the non-central part of your area—by means of the "Pail Closet System."

The contents of the closet pails are removed in the night-soil carts, and, after screening, are shot into the sewers at certain intakes.

Compared to a well-ordered water-carriage system, the pail closet anywhere, and especially in a fairly warm climate, is, in the opinion of the Medical Officer of Health, *relatively* filthy and defective, and may be dangerous.

On the other hand, the pail-closet system, as carried out on the mines, is, on the whole, as good and satisfactory as a pail-closet system can be under the circumstances.

Natives are necessarily employed in this work, and, consequently, cases of oversight and neglect occur from time to time; but this is a shortcoming largely incidental to the labour supply of the community. On the other hand, the cleansing and creosoting of closet-pails are carried out with an efficiency equal to anything which the Medical Officer of Health knows of elsewhere.

The next question is:

Is there any ground for saying or believing that the Municipal Night-soil Disposal Service causes the excessive death-rate amongst native mine labourers within the Municipal Area?

It would be obviously absurd to suggest that the excessive sickness-death-rate amongst mine natives is wholly due to any one particular cause or condition. There is little doubt that it is the result of many factors, and our knowledge as to their respective effect is, no doubt, incomplete and inaccurate.

Pneumonia is one of the most important of these factors, and while it is quite possible, as suggested, that it has spread amongst mine Kaffirs by flies carrying infection to their food from the open pails in the houses of Europeans in the towns and villages along the Reef, this is at present a pure hypothesis. Pneumonia has not hitherto been generally thought of as being caused in this way. It is not especially prevalent amongst natives in Johannesburg employed elsewhere than on the mines, although domestic natives very often live quite close to the closets of their European employers; nor has one heard of any special incidence of the disease amongst natives in other towns where the night-soil disposal conditions of Europeans are similar to, or even not as good as, those here.

On the other hand, careful inquiry elsewhere has shown that enteric fever and diarrhoeal diseases occur with greater frequency in towns served by pail closets than in those with efficient water-carriage system. Enteric fever and diarrhoea are, however, not excessively prevalent amongst mine natives.

In the present state of knowledge, the Medical Officer of Health is only prepared to say that the conditions inseparable from the pail-closet system, undoubtedly favour the occurrence of enteric fever and diarrhoeal diseases, and, in other cases, may have a devitalising effect upon individuals, short of causing actual illness.

The Medical Officer of Health wishes, however, again to record the opinion which he has more than once expressed, that it is highly desirable in the interests of the public health that a water-carriage system should be installed as soon as possible on the mines, and the mines connected to the outfall sewer.

- (2) The proportion of night-soil disposal on the mines which would continue to be done by the pail system, even after the mines were connected with the sewer, would be in respect of the night-soil produced underground.

At present 6,902 pails are used for surface work, and 957 pails for underground work.

THE HYGIENE OF PRINTING.

In April, 1913, in consequence of the reported occurrence amongst printers of two cases of non-fatal lead poisoning, the Medical Officer of Health was approached by the Johannesburg Branch of the Typographical Union of South

Africa in reference to certain unsatisfactory conditions existing in practically all of the printing offices where monotype casting, linotyping and stereotyping processes are carried on. The Union referred specially to the omission to supply effective hoods, ventilating ducts, exhaust fans and dross receptacles, and also to the absence of any recognised code of general regulations for the conduct and protection of the operatives.

M.O.H. 1912-13

Hygiene of
Printing.
Slum
Property.

A preliminary inspection of all the printing offices was at once made by the District Sanitary Inspectors concerned, in regard to general cleanliness and ventilation, lavatory accommodation, etc., and the Medical Officer of Health at the same time wrote to His Majesty's Senior Medical Inspector of Factories, London (T. E. Legge, Esq., M.D.), for detailed information as to the English Factory Department's regulations and procedure in such matters, and especially for technical details (including prices) of case dust-extractors and of ventilating hoods, ducts, fans, etc.; for it was felt that before calling upon the printing firms to instal a system of exhaust-ventilation, the Council should be in a position to indicate fairly accurately what they ought to do in order to obviate expenditure on inefficient installations. The Medical Officer of Health now desires to acknowledge with cordial thanks the courtesy of Dr. Legge and his colleague, Mr. Sydney Smith (His Majesty's Engineering Inspector for Dangerous Trades), in supplying, in the most painstaking and practical manner, the exact information required.

In company with Mr. George Hills (President of the Johannesburg Branch of the Typographical Union), whose technical knowledge was of the greatest assistance, the Medical Officer of Health subsequently systematically inspected all the principal printing works in the town with regard to general and special ventilation, including the removal of fumes, disposal of dross, condition of floors, cleaning of printers' cases, lighting, and the provision of meal room and lavatory accommodation.

By the end of September, 1913, all the necessary technical information required had been obtained, and in October was supplied to each of the firms concerned, who were at the same time requested to make the necessary provisions and alterations.

SLUM PROPERTY.

This matter is of much importance. Its circumstances and bearings in Johannesburg were discussed at some length in the Medical Officer of Health's previous Reports.

There are in certain quarters of Johannesburg, especially in Fordsburg, Ferreirastown, Marshalls, City and Suburban, and Old Doornfontein, a considerable number of squalid dwellings which were mostly erected before the present By-laws came into force, are of very poor construction, dilapidated in condition and crowded on area. At the same time, if tested by considerations such as sufficiency of lighting, ventilation, water-tightness, closet accommodation and yard space, most of these places, in spite of their unsightly appearance and other drawbacks already indicated, are of such a nature that it would be difficult to get from any Magistrate (even if the Council had the power to proceed in that way) an order for their closing, much less for their demolition.

Further, the fact has undoubtedly to be borne in mind that in calling upon these people to patch up and more or less to renovate these essentially undesirable dwellings, the Council would simply be prolonging the life of structures which, in the Medical Officer of Health's opinion, should be swept away. This statement is not, however, made in extenuation of any insanitary conditions which may exist or arise therein.

On the other hand, the fact that they are old and dilapidated induces a certain class of property owner to acquire and let them promiscuously at very remunerative rents to mean whites, coloured people and Asiatics, whose filthy habits make it a matter of very great difficulty to secure conditions of even passable cleanliness as regards yards, closets, etc.

M.O.H. 1912-13

Slum
Property.

Section 84 of the Local Government Ordinance, 1912, empowers the Council to take proceedings before the Magistrate for the closing of premises used for human habitation when the Council is satisfied on the certificate of the Medical Officer of Health that in consequence of defective or unsuitable construction or arrangement, bad condition, want of light, air or ventilation, or other sanitary defect likely to retain, engender or spread the infection of any disease, and that by reason of such liability the occupation of such premises constitutes, or would constitute, if the same were occupied, a grave danger to the public health or to the inhabitants of such premises or any neighbouring premises.

In November, a test case was brought before the Magistrate in respect of a certain insanitary property situated at the south-east corner of Harrison and Anderson Streets. The case was first called on the 11th December, 1912, and adjourned to the 29th January, 1913, when the facts of the case were placed in full detail before the Court. On the 3rd February, judgment was given in favour of the Council, the magistrate holding that the only function of the Court at that stage was to assure itself, as in all applications for *interim* orders, that the application is in order, is made *bona fide* and shows a *prima facie* case. The owner of the property subsequently appealed, and, on the 17th April, 1913, the Supreme Court held that the Magistrate was wrong, and should have decided the case on its merits. The case was accordingly remitted to him for that purpose, and the appeal allowed, with costs which amounted to £73 9s. 2d. On the 27th May, 1913, the case was heard again by the Magistrate, and, on the 28th May, the Magistrate again decided in favour of the Council, and made a closing order in terms of the section. A further appeal was noted, but not proceeded with. In the course of the judgment of the Supreme Court on the 17th April, 1913, exception was also taken to the form of the certificate (which had been allowed by counsel) under the Ordinance. This and other facts have led to a reconsideration of the whole position.

In England, "The Housing of the Working Classes Act, 1890," Section 32, makes it the duty of every local authority to take proceedings for closure against the owner of any dwelling house which appears to be in a state "*so dangerous or injurious to health as to be unfit for human habitation.*" It is, further, specified in the third schedule of the Act that (elsewhere than in London) closure proceedings shall be taken under the Nuisance Sections (91—97) of the "Public Health Act, 1875."

Under Section 84 of the Transvaal Local Government Ordinance, 1912, however, the Medical Officer of Health must certify:—

1. that the reported "premises are in consequence of defective or unsuitable construction or arrangement, bad condition, want of light, air or ventilation, or other sanitary defect, *liable to retain, engender or spread the infection* of any disease," and
2. "that by reason of such liability" (*i.e.*, to retain, engender or spread the *infection* of any disease) "the occupation of such premises constitutes or would constitute a grave danger, etc."

This Clause was originally drafted in 1904 to deal specially with areas or premises infected with plague, and it will be observed that it specifically limits the reference of the Medical Officer of Health's certificate to "the *infection* of any disease." Now, the only two diseases which can be practically considered in this connection are tuberculosis and plague. In respect of tuberculosis, however, the doubt of the existence of such special liability is such that, in view of recent work and expression of weighty opinion on the subject, one cannot conscientiously swear to such liability as an absolute fact, however probable it may be. With regard to plague, there is no known plague in South Africa at present, and, therefore, the liability of any dwellings in Johannesburg to "retain or spread the infection" of plague is, at the moment, practically non-existent.

Fortunately, however, Section 88 (23) (c) of the Local Government Ordinance, 1912, empowers the Council to make, alter, or revoke By-laws for the closing of buildings or parts of buildings "*unfit for human habitation,*" and for the prohibition of their use for habitation or occupation. Such By-laws have recently been drafted by the Medical Officer of Health on the English lines, and do not impose upon the Medical Officer of Health the unnecessary obligation of swearing that the condition of the premises causes special liability to *infectious* disease.

It is hoped that these By-laws will be gazetted early in 1914, and that active and much-needed steps may then be possible in regard to the insanitary property in this town.

M.O.H. 1912-13

Scavenging.
Street
Sweeping.
House Refuse
Removal and
Disposal.
Carcase
Removal.
Destructors.
Removal
of Night
Soil Pails.

SCAVENGING.

This matter is fully dealt with in the Annual Report of the Manager of the Scavenging Branch (Mr. F. C. Gavin, M.R.C.V.S.), and the Medical Officer of Health has little to add to previous observations on this matter, except that he is strongly of opinion that services of this kind should, for general reasons of public health, be rendered with the highest degree of efficiency practicable, and at charges which, while fully covering outlay, do not become a source of considerable Municipal revenue.

STREET SWEEPING.

This is done in the night-time, except during the wet season, when it is postponed to the early morning, so as to get the mud off the streets just before the day's traffic commences. An average of 10,556 mule loads were removed by 102 Scotch carts each month. The expenditure under this head for 1912-13 was £23,643 5s. 1d., but, subject to financial considerations, this service might with great advantage be considerably increased.

HOUSE-REFUSE REMOVAL AND DISPOSAL.

House-refuse is removed in petrol-driven motor lorries and two-wheeled open tipping carts. At each of the upper corners of each cart is fixed a ring, and for each cart a waterproof tarpaulin is supplied, which is secured to the rings. The Medical Officer of Health has more than once suggested the provision of dust-carts with flap covers, to prevent the blowing about of rubbish, but the Manager of the Scavenging Department, after considering various types of covered dust-cart, prefers the tarpaulin arrangement, as it admits of the cart taking a larger load, and saves the considerable weight of a wooden cover.

An average of 714 Scotch cart-loads per day of house-refuse was collected; some of it was burnt at the destructors and some deposited at tips.

A large tip was opened at the south-west corner of Milner Park, Vrededorp, on the 25th May, 1911, and, although the process of tipping rubbish there has been attended with unavoidable unpleasantness, the inhabitants of Vrededorp agreed to submit to it in view of the fact that a number of unsightly hollows would thus be filled up, and converted eventually into a recreation ground.

Refuse-removal service was extended to Melrose, Rosebank, Parktown North, Parkwood and The Hill.

CARCASE REMOVAL.

457 horses, mules, donkeys and foals, 2,297 dogs and 185 cattle, 1 turkey, 8 springbok and 2 buck carcasses were removed, and either buried at the depositing sites or burned at the destructor.

DESTRUCTORS.

During the year, the Burghersdorp Destructor was dismantled and remodelled at a cost of approximately £20,000. It now consists of eight cells. Four additional cells were added to the Natal Spruit Destructor.

At Norwood Destructor a regenerator was installed, a clinker-cooling chamber constructed, the tipping platform roofed in and provided with water-sprays, and the chimney raised 20 feet.

REMOVAL OF NIGHT SOIL AND DISINFECTION OF PAILS.

The average number of pails removed per night for the twelve months ending 30th June, 1913, has been 18,497. Every pail, before being sent out, is washed, tested for leakage, dipped in boiling creosote in steamjacketed pans, and, after the surplus creosote has dripped off in such a way that it is collected and available for use again, is "nested" with other pails and placed in the carts for distribution.

M.O.H. 1912-13

Cost of
Sanitary
Services.
Locations.
Government
Schools.
Licensed
Places.

The Medical Officer of Health has nothing to add to remarks made in previous reports with regard to this process, which is most effective and economical in its working.

The table inset herewith shows the cost of the various services during the years 1910-13:—

Year ended 30th June.	Service.				Cost.	Revenue.	Surplus.	Deficit.
1910	Night Soil Service	...	...		£ 62,902	£ 155,262	£ 20,245	—
	Refuse and Carcase	...	...		27,690			
	Slop and Bathwater	...	...		44,425			
	TOTAL...	...	...		135,017	155,262	20,245	—
1911	Night Soil Service	...	...		51,759	143,958	13,400	—
	Refuse ... ..	...	...		31,876			
	Slop and Bathwater	...	...		43,923			
	TOTAL...	...	...		130,558	143,958	13,400	—
1912	Night Soil Service	...	...		59,540	143,093	2,255	—
	Refuse ... ..	...	...		37,795			
	Slop and Bathwater	...	...		43,503			
	TOTAL...	...	...		140,838	143,093	2,255	—
1913	Night Soil Service	...	...		61,351	110,784	49,433	
	Refuse ... ..	...	...		52,790			
	Slop and Bathwater	...	...		46,453			
	TOTAL...	...	...		160,594	142,057		18,537

LOCATIONS.

The Medical Officer of Health does not interfere in the work of the Locations, except where his advice is sought by the Superintendent. From time to time, however, the Medical Officer of Health is called on for reports on special matters. This subject was dealt with at some length in the Medical Officer of Health's Report 1909-11, and the Medical Officer of Health has, at present, little to add to the remarks made therein.

GOVERNMENT SCHOOLS.

The type of school now erected by the Education Department, and for which Mr. W. P. Eagle, Chief Architect, Public Works Department, is responsible, is one of which any community might be proud.

The Medical Officer of Health, in his capacity as Hon. Cons. Medical Officer to the Rand Central (*i.e.*, Johannesburg) School Board, has been from time to time consulted on structural and other questions of school hygiene.

LICENSED PLACES.

From 1st July, 1912, to 30th June, 1913, 2,722 applications for licences of various kinds have been dealt with, the premises in question being in all cases carefully examined as to sanitary requirements.

	1912-13.			M.O.H. 1912-13
	Granted.	Refused or not taken out.	Total.	
1. Tea Shops, Eating Houses, Restaurants, etc....	800	36	836	Licences. Prosecutions.
2. Dairies	397	84	481	
3. Butchers' Shops	377	27	404	
4. Bakers	95	2	97	
5. Kaffir Eating Houses	139	11	150	
6. Laundries	109	5	114	
7. Ice Creameries	325	12	337	
8. Noxious or Offensive Trades	83	10	93	
9. Asiatic Eating Houses	1	1	2	
10. Aerated Water Factories	26	1	27	
11. Hairdressers and Barbers	177	4	181	
	2,529	193	2,722	

PROSECUTIONS.

151 persons were prosecuted for various breaches of the Sanitary Regulations; 146 were convicted, and fines aggregating £353 2s. were imposed. Particulars are appended:—

BY-LAWS INFRINGED.	Race of Accused.			Totals.
	Whites.	S.A. Coloured.	Asiatics.	
Prevention of Nuisances	58	3	3	64
Infectious Disease	—	—	—	—
Sale of Food and Drugs	21	—	—	21
Dairies and Milkshops	—	—	—	—
Bakehouses	—	—	—	—
Eating Houses	1	—	—	1
Butcher Shops and Inspection of Meat	1	—	—	1
Washing and Laundries	—	—	—	—
Kaffir Eating Houses	6	—	—	6
Aerated Water Factories	—	—	—	—
Asiatic Tea Rooms	—	—	—	—
Barbers' Shops	—	—	—	—
Native Location	—	35	—	35
Traffic By-laws	3	—	2	5
Insanitary Yards, L.G.O., Sect. 86 ...	18	—	—	18
TOTALS	108	38	5	151
RESULTS—				
Convicted and Fined	101	36	4	141
Convicted and Cautioned	3	2	—	5
Dismissed	3	—	1	4
Charge Withdrawn	1	—	—	1
AMOUNT OF FINES	£317 12 0	£25 0 0	£10 10 0	£353 2 0

M.O.H. 1912-13
Expenditure.
Staff.

This work was closely supervised by the Medical Officer of Health, under whose personal direction the proofs of evidence, summonses, subpœnas, indictments and charge sheets are prepared and handed to the Assistant Public Prosecutor in the Magistrate's Court.

EXPENDITURE OF PUBLIC HEALTH DEPARTMENT.
(This does not include Scavenging Expenditure.)

	1910-11	1911-12	1912-13
	£	£	£
Salaries	13,587	13,603	14,471
Native Wages, Food and Passes	190	165	172
Locomotion	667	804	990
Miscellaneous Expenses	3,662	3,057	2,964
Cartage... ..	602	401	618
Isolation Hospital	2,222	1,898	2,826
Disinfecting Station	324	420	252
Rents, Rates and Insurance	126	186	181
Depreciation	261	42	33
Smallpox	—	1,056*	980
	£21,661	£21,632	£23,487

* Including purchase of Motor Van.

STAFF OF PUBLIC HEALTH DEPARTMENT.

A.—INSPECTORS.—The following statement shows the number of Sanitary Inspectors employed during the year under notice as compared with the number before the war:—

	Before War.	1904-6	1906-9	1909-10	1910-11	1911-12	1912-13
Chief Inspector	1	1	1	1	1	1	1
District Inspectors	16	17	14	15 (1 relief)	16 (1 relief)	16 (1 relief)	15
Native Constables with District Inspectors	16	3	2	3	2	2	2
White Constable	1	—	—	—	1	1	1
Mines Sanitation Inspector	—	1	2	2	2	2	3
Infectious Disease Inspector	—	2	2	2	2	2	2
Disinfecting Inspector... ..	—	1	1	2	2	2	2
Licensing Inspector	1	1	—	—	—	—	—
Food Inspectors	2	1	1	1	1	2	1
Food Inspector at Kazerne	—	1	1	1	1	—	1
Ratecatchers	—	6	2	2	2	2	2
Slaughterhouse Inspector	1	1	1	1	—	—	—
Health Visitors	—	—	—	—	—	2	2

Of the 27 White Inspectors, 21 possess the certificate of the Royal Sanitary Institute.

It is, further, to be noted that since the British Occupation, 41,344 plans of new houses were approved to 30th June, 1913, and that the area of supervision during 1912-13 included Berea, Yeoville, Bellevue, Bellevue East, Lorentzville, Judith Paarl and Jeppestown Extension districts, besides the numerous townships and mines included within the Municipality as the result of the Extension Scheme sanctioned by Ordinance 13 of 1902, and 36 of 1903.

M.O.H. 1912-13
Sanitary
Districts.

II.—NUMBER AND DISTRICTS OF DISTRICT SANITARY INSPECTORS.—There are fifteen District Sanitary Inspectors, whose districts were, during 1912-13, as follow:—

District.	Townships included in Districts.	No. of Houses in District.	No. of Licensed Places.
1	Fordsburg, Burghersdorp and Newtown - -	2,238	115
2	City and Suburban, Marshalls and Ferreiras, between Mine Fence and Main Street - - - -	1,280	124
3	City and Suburban, Marshalls and Ferreiras, between Main and President Streets - - - -	1,202	232
4	Johannesburg, between President Street and the Railway on south and north, and End Street and Kazerne on east and west - - - -	1,216	232
5	Braamfontein to Hospital Hill - - - -	2,548	126
6	Hillbrow, Berea, Yeoville, Parktown, Forest Town and part Houghton Estate - - - -	1,387	25
7	Old and New Doornfontein - - - -	1,651	113
8	Troyeville, Bertrams, Lorentzville, Judith Paarl and Highlands	1,889	25
9	Jeppes, Fairview and Wolhuter - - - -	2,530	143
10	Belgravia, Jeppes Extension, Malvern, Denver, Cleveland and New Heriot - - - -	1,461	92
11	Vrededorp, Mayfair, Paarlshoop and Langlaagte - -	2,148	76
12	Malay Location - - - -	1,251	18
		Native Constable provided in Malay Location.	
13	Kensington, Bezuidenhout Valley, Observatory, Bellevue and Bellevue East - - - -	2,275	37
14	"Northern Suburbs"—from New Clare on west, through Auckland Park and Parktown North and Rosebank to Riviera, Houghton, Oaklands, Melrose, Orchards, etc. -	1,513	76
15	"Southern Suburbs"—all Townships south of Mines -	2,286	219

A.—INSPECTORIAL STAFF.—The Medical Officer of Health has again to thank Mr. Thomas Manion (Chief Inspector) and the District Inspectors for continued efficient work, and especially for their ready, energetic and very successful assistance during the smallpox outbreak of July-September, 1912.

During the official year, 5,124 written notices were served by the inspectors in the course of their work.

The work of the HEALTH VISITORS is referred to at p. 14.

As Appendix C appears an Address by the Medical Officer of Health on "The Duties, Qualifications and Difficulties of Sanitary Inspectors."

B.—CLERICAL STAFF.—This consists of a chief clerk (Mr. F. Thompson), a typist-correspondent, a licensing clerk and two office boys. Apart from the usual statistical records of such an office (which in Johannesburg are laboriously increased by the necessity of differentiating between Whites, Natives, Eurafrians, and Asiatics), and attending to the complaints of a very

M.O.H. 1912-13

Matters
requiring
Council's
attention.

sensitive public, no less than 7,525 letters—not including circulars and formal acknowledgments—were written during 1912-13. In addition, the whole of the clerical work required in connection with the issue of 2,097 permits for natives to live in town, with 2,722 applications for trading licences, and with 151 prosecutions undertaken by the Department, has been dealt with. The Office Staff has worked thoroughly well, and again the Medical Officer of Health wishes to record his warm appreciation of their willing and effective assistance.

IMPORTANT MATTERS REQUIRING SPECIAL ATTENTION.

In concluding this Report, the Medical Officer of Health begs to direct the Council's attention to the following important matters, which should be dealt with as promptly as possible:—

- 1. The closing and demolition of Slum Property;
- 2. The satisfactory Housing of Natives;
- 3. The better Control of the Milk Supply;
- 4. The continued extension of the water-carriage system of sewage disposal.

CHARLES PORTER, M.D., M.R.C.S., D.P.H.,
Barrister-at-Law,
Medical Officer of Health.

24th November, 1913.

APPENDICES.

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ADVICE TO MOTHERS.

Mother's Duties Before Birth of Her Child.—The future constitution of the child depends largely on the condition of the health of the mother during pregnancy. The expectant mother should, therefore, study her own health by—

1. Securing careful ventilation of the rooms in which she lives by open windows, especially at night time.
 2. Keeping her rooms clean and well lighted.
 3. Eating sound, wholesome food, rather more liberally than at other times.
 4. Drinking milk, barley water, lemonade, water, and avoiding spirits, beer, stout, excessive tea and coffee drinking.
 5. Securing regular daily action of bowels.
 6. Taking regular exercise daily in the open air and avoiding late hours and violent exertion, such as lifting heavy weights, etc.
 7. Clothing in loose gowns, so as not to exert pressure or friction on the breasts or nipples.
 8. Keeping the breasts and nipples clean. For three months before confinement the nipples should be washed daily with warm water and rubbed with vaseline or equal parts of vinegar and water (this prevents cracked nipples during suckling).
-

Infant Feeding.—The natural and best food for an infant is its mother's milk. When an infant is at the breast or at the bottle it should be fed at regular intervals, and **not whenever it cries**, for over-feeding and irregular feeding cause indigestion, and consequently more crying.

Breast Nursing.—Before and after nursing clean the nipples with a solution made by dissolving 1 dessert spoonful of boric acid powder in half-cup of boiling water. Keep this in a clean stoppered bottle, ready for use; between nursing cover the breasts with a clean cloth. No corset which in any way presses on the breasts should be worn.

Care should be taken, when feeding, to keep the infant's nose away from the breast.

When a mother finds she has not a sufficient milk supply (before resorting to a bottle) she should try the following things, if possible:—

1. Plenty of cow's milk.
2. Gruel made of Robinson's Patent Groats, Grant's Oatmeal, Tiger Oats, Quaker Oats and mealie meal, mixed with condensed milk if cow's milk is unobtainable.
3. Cocoa.
4. Barley water.
5. Lactagol, obtained at any chemist.
6. Somatose (milk), obtained at any chemist.

Wean the infant when it is nine months old; prolonged suckling is no safeguard against pregnancy—it only weakens the mother and generally produces rickets in the child. If possible, avoid weaning or change of food in hot weather.

Bottle Feeding.—If bottle-fed, the following rules should be observed:—

1. All milk other than condensed milk should be sterilised **as soon as it is received** from the **dairy**. (To sterilise milk, put it into a thoroughly clean bottle with a thoroughly clean cork or

stopper, put the bottle in a saucepan of cold water, place the saucepan on the stove, bring the water to boiling point and let it boil for twenty minutes, take the bottle out and place it in a basin of cold water, to cool it rapidly.) Keep it well covered in a cool, shady, well-ventilated place, free from flies.

2. Feeding bottles should be boat-shaped, preferably with an opening at each end; they should be fitted with a short rubber teat capable of being easily turned inside out for cleaning. As the danger of infecting the milk lies as much in the nipple as in the bottle, on no account should a long tube bottle be used, as these foul very quickly, and it is impossible to keep them clean.

Bottles and teats should be boiled once a day (by placing in a basin of cold water, standing this on the fire and allowing them to boil for ten minutes). After each feed, rinse bottle and replace in cold boiled water.

Infants should be fed every two hours during the day and once at night; after the second month, every three hours during the day and not at night, unless absolutely necessary.

If an infant cries between feeds, a little boiled water will often satisfy it, but on no account should sugar be added, as sugar causes excessive acidity, distends the abdomen and causes unnecessary pain.

With all artificial foods a little fresh food should be given once a day in the form of fresh fruit juice. Cod liver oil or salad oil may be given when cream is unobtainable. A few drops of cod liver oil or salad oil given daily after the feed will help and prevent constipation and rickets. Barley water should be made twice a day, as it quickly gets sour.

Care of Baby.—A healthy baby gives less trouble and costs less to bring up than an unhealthy one. The following directions will help you to make your child healthy:—

1. **Fresh Air.**—Be careful not to expose a new-born infant to cold air, damp clothes or draughts, but, from the very first, train the child to sleep in a **cool** room, with an open window, and out-of-doors when the weather is suitable. On no account put the baby's cot near a stove. Keep the face free from clothing, so that the infant may breathe properly.

2. **Clothing.**—Keep the legs, arms and body warm, but not too warm; an infant should not sweat. Do not hamper the movements of the limbs, chest and belly by heavy and tight clothing. Flannelette should not be used, because it is non-absorbent and chills the infant; it also easily catches fire. Flannel should be used, and **flannel binders kept on until teething is finished.**

3. **Exercise is essential** for an infant; let it use its arms and legs freely, and, after six months, encourage it to begin to sit up, then stand and crawl.

4. **Sleep.**—After feeding the infant, return it to its cot. See that its feet are warm and that it is quite comfortable. Let it learn that the cot is the proper place in which to sleep. Never rock a baby in order to induce sleep, nor should the child be allowed to go to sleep with the nipple in its mouth.

5. **Habits.**—Be careful to induce good and regular habits during the first few weeks of life; that is the time when habits are most easily formed.

6. **Dummy.**—It is very injurious to an infant to suck a dummy. There are many reasons why it should not do so, and one that is most important is that a dummy conveys dirt and germs. Disease is often the result. As an example, flies settling on a dummy convey, by their feet, all kinds of filth and germs too small to be seen with the naked eye, and thus, in many cases, the dummy is a cause of that much-dreaded disease, green diarrhoea. Medical advice should be sought at once if an infant passes green stools.

7. **Baths.**—A baby should be bathed at least once a day in warm water (as hot as the elbow can easily stand). If possible, use pure Castille soap, and dry carefully with a soft towel, but rub

with a certain amount of friction. Remember that soap left on an infant's head forms a layer of scurf, which is difficult to get rid of.

8. **Mouth.**—An infant's mouth should be wiped out after each feed with a piece of clean soft rag and weak boracic water. Remember that neglect of the mouth often causes thrush.

9. **Eyes.**—An infant's eyes should be bathed twice a day with weak boracic lotion; protect from **strong** light. If an infant suffers from a discharge from the eyes, medical advice should be sought **at once**.

10. **Teeth.**—An infant's teeth (milk teeth) should be attended to from the first. Neglect of the teeth in infancy is often the cause of much misery in after life.

11. **Nose.**—An infant's nose should be carefully cleaned with a soft rag or cotton wool; if the nose appears stuffed, apply olive oil or vaseline on the bridge of nose and insert a drop into each nostril.

12. **Ears.**—An infant's ears should be carefully cleaned each day, and should an infant appear to be suffering with pain in the ear, do not interfere, but seek medical advice.

13. **Sickness.**—Never give medicine without first asking the doctor's advice; this applies especially to patent medicines.

14. **Vaccination.**—It is advisable to have an infant vaccinated as soon as possible, preferably during the first three months of life, and it is very important to keep the vaccination marks most carefully protected from dirt, flies, etc.

15. **Don't** feed an infant whenever it cries.

Don't forget to keep a window open in the room where baby sleeps, **both day and night**.

Don't cover baby's face when sleeping.

Don't give the dummy.

Don't forget to let baby have plenty of fresh air.

Don't forget to bathe baby at least once a day.

Don't forget to clean baby's mouth, nose, ears, eyes, and teeth when they come.

Don't forget to have baby vaccinated.

Don't forget to call in a doctor when baby passes green stools.

Don't tamper with baby's ears.

Don't forget to keep the flannel binder on baby until it has finished teething.

Don't give medicine without a doctor's advice, especially patent medicines.

Don't forget, when baby has green diarrhoea, to place napkins **at once** into a solution of fluid disinfectant and boil them afterwards.

Don't give your baby tea and coffee.

Don't give meat to baby until it has all its teeth.

Don't give baby unripe or over-ripe fruit.

By Order of

THE PUBLIC HEALTH COMMITTEE.

November, 1913.



APPENDIX B.

Recommendations in Regard to Surface Sanitation on Mines.

NOTE.

These "Recommendations" have been prepared with the invaluable assistance of Mr. Alexander Cowie, C.E. (Chief Mines Sanitation Inspector, Johannesburg) and the friendly criticism of Mr. Samuel Evans (Chairman, Crown Mines), for the guidance of Mine Managers, Compound Managers and others responsible for surface sanitation on mines. They should be read in conjunction with similar "Recommendations in regard to Underground Sanitation," drawn up in this Office in August, 1910, and obtainable from the Government Mining Engineer.

Further copies of this pamphlet will be forwarded on application.

CHARLES PORTER, M.D.,

Medical Officer of Health, and Medical Officer (for Johannesburg) under "Coloured Labourers' Health Regulations, 1911."

Public Health Department,
JOHANNESBURG,
20th November, 1913.

In order to establish and maintain satisfactory surface sanitary conditions at any mine, the following rules and recommendations should receive careful attention:—

I.—HOUSING ACCOMMODATION.

All buildings and additions and alterations thereto, sanitary conveniences, drainage arrangements and water supply must conform, so far as native housing is concerned, to the Native Labour Regulations framed under Act 15 of 1911, and generally, as regards both white and native housing accommodation, etc., to the Municipal Building, Drainage and Public Health By-laws.

In connection with housing accommodation generally, the buildings should be so constructed that—

- (a) the floors are impermeable to vermin and insects;
- (b) the walls, ceilings, floors, etc., contain no crevices where rats, mice, cockroaches, bugs, etc., can take cover;
- (c) each room and the whole of the building can be easily fumigated, if necessary; and
- (d) each room and the whole of the building, including verandahs, can be easily screened against mosquitoes and flies without structural alterations. It is important that the screening everywhere, excepting on doors, should be a fixture; consequently the windows should open inwards, so that they can be readily cleaned and opened irrespective of the fixed screens.

When existing premises of a more or less dilapidated and insanitary nature are required to be put in order, it is often possible so to repair and alter

them as to make them reasonably habitable. It is questionable, however, whether this course is always the wisest one, as these old buildings, sooner or later, again fall into disrepair, and, therefore, no permanent improvement is effected. To pull down and rebuild these premises entirely is, apart from the undoubted improvement, frequently the more economical course in the long run.

It is the owner's duty, of course, to keep premises in repair, and much expense would be saved on some mines if, instead of waiting until called upon by the Government or Local Authority to carry out this duty, repairs were effected on the principle that "a stitch in time saves nine." In addition to the ordinary upkeep of old buildings, however, it is desirable that such premises should, so far as is reasonably practicable, be brought into conformity with modern ideas and requirements.

II.—NATIVE QUARTERS.

Assuming that all buildings are of approved construction, well lighted, ventilated and warmed, and provided with suitable and sufficient sanitary conveniences and a plentiful supply of pure water for drinking and cooking purposes, the following matters in connection with the native quarters call for close attention, namely:—

(a) MINE COMPOUNDS.

1. All cleaning up and scavenging should be carried out under the close and constant supervision of a capable, energetic and conscientious man responsible to the Compound Manager.
2. Daily attention should be paid to the thorough sweeping up and removal of all refuse, rubbish and dirt from rooms, kitchen, store-rooms, channel drains, catchpits and yards, and also the cleaning and disinfection of latrines, urinals, baths, wash-houses and drains.
3. Covered galvanised iron refuse receptacles, of an approved type, with close-fitting covers, should be provided in the compound yards for the temporary storage of refuse and waste scraps of food awaiting removal by the carts.
4. All yards should be cleared of refuse at least once a day, and the refuse disposed of by means of a suitable destructor or incinerator.
5. The internal surfaces of walls and roofs of rooms should be thoroughly disinfected and limewashed about once a month, especially during the summer; the floors scrubbed, flushed and disinfected; the bed-boards dipped, scrubbed and disinfected in a suitable tank to which steam or hot water is laid on; and the fixed supports for bunks scrubbed and disinfected.
6. Internal surfaces of walls and roofs of kitchens, store-rooms, baths, wash-houses, latrines and urinals should be thoroughly disinfected and limewashed at frequent and regular intervals.
7. All windows should be kept clean.
8. Windows should be kept open whenever the state of the weather permits.
9. The rooms should be kept free from all superfluous *bedsteads and drapings*, as these tend to obstruct light and ventilation and harbour dust, dirt and vermin.
10. Closed stoves should be used in preference to open fires or braziers, in order to keep the rooms free from smoke.

11. An arrangement which promotes general tidiness in the sleeping rooms is the provision of suitable shelving for the storage of boots, boxes and other belongings of the inmates, which belongings are, in the absence of such shelving, invariably strewn over floors and below bed bunks, interfering greatly with the proper sweeping of room floors.
12. The provision of clothes-drying-lines in the yards of some compounds seems to be greatly appreciated by the natives. This enables them to hang out wet clothing in the yard to be dried by direct sunlight, instead of having such clothing dried in the rooms.
13. Every effort should be made to induce all natives to wash their blankets and other clothing regularly. This is very important.
14. Overcrowding of rooms should be guarded against by proper distribution of the natives.
15. Suitable, sufficient and convenient urinal accommodation should be provided in the compound yards, otherwise the natives will commit nuisances by urinating in the channel drains or on the yard surfaces.
16. Fly-screening should be provided for store-rooms for butcher meat and other foodstuffs, and, in addition, these store-rooms should be rendered rat-proof.
17. Latrines and urinals should be provided with self-closing cleansing-flaps, fly-proof-doors, and fly-gauze fitted over all ventilating and other openings.
18. Due care, of course, must be exercised to ensure that all food, fish, meat and vegetable supplies sent to the compound are sound, fresh and wholesome.

(b) LOCATIONS AND CONTRACTORS' COMPOUNDS.

The scavenging arrangements detailed above in connection with mine compounds are more or less generally applicable to locations and contractors' compounds.

Housing accommodation and sanitary conveniences for married mine natives and natives employed on the tailings dump contracts should conform to the broad lines laid down for mine native compounds. Failing this, all contractors' natives should be housed in the mines' compounds.

(c) NATIVE HOSPITALS.

All door, window, ventilating or other openings in the various buildings at these establishments, including all sanitary conveniences, should be fitted or protected with wire fly-gauze.

The scavenging arrangements should be generally as at the compound. *Vide* II. (a) 1, 2, 3, 4, 6.

III.—WORKS, SHAFTS, CHANGE HOUSES, ETC.

To prevent the commission of nuisances on the ground at and around the various surface works, it is important that the pail-closet, latrine and urinal accommodation should be suitable, sufficient and so located as to be conveniently situated for the different centres of work. Employees should be warned against urinating on the ground in the vicinity of the works.

All the sanitary conveniences should be fly-proof screened.

The baths, wash-hand basins and the premises generally at the change houses should be kept thoroughly clean by the attendants in charge.

IV.—WHITE MARRIED QUARTERS.

At present the more or less general practice is that the pail-closets at these quarters are cleaned and disinfected daily, and limewashed periodically by the mine scavengers. This practice should be assiduously continued.

The Municipal type of portable galvanised iron dust-bin with cover should be installed at these quarters. On some mines this provision has already been made.

All pail-closets should be fly-proof screened, and have self-closing cleansing-flap-doors.

V.—SINGLE MEN'S QUARTERS.

Pail-closet and urinal accommodation should be conveniently situated for these quarters. This applies particularly to urinals, as, in the absence of a convenient urinal, nuisances will be committed on the ground in close proximity to the rooms. Men should be warned against urinating on the ground in the vicinity of the quarters.

Bath and wash-hand-basin accommodation is necessary at these quarters if, as is frequently the case, the change house is not sufficiently convenient.

Daily sweeping of floors and weekly scrubbing out and disinfecting of same by the mine natives, under the supervision of the white caretaker, is a very usual practice on the Reef, and its general adoption is recommended.

The Municipal type of portable galvanised iron dust-bin with cover should also be installed at these quarters.

All closets and urinals should be fly-screened, and have self-closing cleansing flap-doors.

VI.—MINE BOARDING HOUSES.

All door, window, ventilating or other openings at boarding house premises, including sanitary conveniences, should be fly-proof screened.

Municipal type of galvanised iron refuse receptacle with cover should be provided.

Particular attention should be paid to the satisfactory disposal of waste-water from these premises.

VII.—GENERAL SCAVENGING AND REFUSE DISPOSAL.

In order to secure cleanliness and freedom from nuisance, very particular attention must be given to the following points:—

(1) SCAVENGING OUTSIDE THE NATIVE COMPOUND.

The Surface Overseer of the mine should, by means of a sufficient and properly organised staff of native scavengers,

(a) remove at regular intervals during the week all dry refuse from the white quarters, mine boarding houses and native hospital, etc.;

(d) daily cleanse and disinfect thoroughly the floors, seats, troughs, etc., of all pail-closets, latrines and urinals at quarters and works, and also limewash at frequent and regular intervals the internal surfaces of walls and roofs of such conveniences;

(e) periodically, at short intervals, thoroughly clean out and disinfect all surface channels, sluits and trench drains;

(f) by regular inspection, take measures to abate and, as far as possible, prevent recurrence of nuisances caused by natives depositing excreta on vacant and outlying ground and in sheltered or less generally frequented spots on the property;

(e) abate and, as far as possible, prevent recurrence of any nuisance caused by employees urinating on ground in the vicinity of the single quarters and workshops, etc.;

(f) keep the surface generally free from refuse and rubbish by a periodical scavenging and removal of rags, old clothing, paper, etc., blown or scattered over the property;

(g) generally make sure that the removal of refuse, and especially stable refuse, takes place at such frequent intervals as will render impossible the breeding of flies in such refuse.

(2) SOLID REFUSE DISPOSAL.

The existing method of disposal of solid refuse on most of the mines is very unsatisfactory. The refuse is tipped on the surface, and the tendency is for rats, vermin and flies to feed and breed on the tips. Suitable destructors or incinerators should be erected to deal with all refuse and garbage, and the existing tips, where exposed, covered up with a sufficient depth of clean soil or ashes or tailings. All meat, fish, jam or syrup tins and such-like should be passed through the incinerators to destroy the remains of food and help to prevent flies from gathering and breeding. All tins should be buried or flattened out, otherwise, if left lying exposed on the surface, most of them collect water, and then form ideal breeding grounds for mosquitoes. Vigilance should be exercised to prevent outsiders dumping manure and all kinds of refuse and rubbish in a haphazard manner on the mine property.

(3) LIQUID REFUSE DISPOSAL.

It is, of course, generally recognised that a very far-reaching improvement would be effected in the sanitary conditions on the mines by the installation throughout of water-borne systems of sewage removal, preferably by connection to the public sewer. At some mines, however, even under existing conditions, much has been done towards at least minimising nuisance from waste water by having, in the vicinity of compounds, dwellings, works and roadways, etc., all surface channels properly paved and graded or piped in; the ultimate disposal of such water in most cases being in the mine dams, where purification by dilution is depended on. Again, in many instances, and more especially at the white quarters, satisfactory disposal of waste water has been carried out by means of French drains, by surface distribution over prepared ground, or by conservation in tanks, the contents of which are removed by the mine scavengers.

(4) NIGHT SOIL REMOVAL.

As far as conveniently possible, a daily sterco removal service should be instituted.

VIII.—KAFFIR EATING HOUSES AND STORES.

There is apt to be, from time to time, a good deal of slackness as regards refuse-disposal and general cleanliness at these places, and it is impracticable to keep them under daily official supervision. It is, therefore, recommended that it be made the duty of the Compound Manager to cause a frequent, if not daily, inspection to be made of such premises, and to report at once (e.g., by 'phone) to the Office of the Medical Officer of Health, any irregularity observed, time of inspection, etc. Prosecution would follow, where justifiable, and, in addition, such supervision would "tune up" the condition of these places, and probably benefit the health of the natives.

IX.—DESTRUCTION AND PREVENTION OF FLIES AND MOSQUITOS.

See attached circulars (*Annexures "A" and "B"*).

ANNEXURE "A."

MUNICIPAL COUNCIL OF JOHANNESBURG.

THE DANGER OF FLIES.

Don't allow flies in your house.

Don't permit them near your food—especially milk.

Don't buy foodstuffs where flies are tolerated.

Don't eat where flies have access to the food.

Flies are amongst the most dangerous insects known to man. Flies are the filthiest of all vermin. They are born on filth, and carry filth around with them. They are maggots before they are flies.

Flies are known to be carriers of millions of death-dealing disease germs. They leave some of these germs wherever they alight.

Flies may infect the food you eat. They come to the kitchen or dinner table fresh from ashpits, privies, manure heaps, decaying animal or vegetable matter, from the sick room and elsewhere, with all sorts of filth on their feet, and they deposit it on food, so that you may be constantly eating filth from these places.

All food, especially milk, should be screened from flies. When germs are deposited on milk they multiply at an enormous rate. The careful housekeeper must never buy food which has been exposed to flies or dust from the street.

Do not eat food that has been contaminated by flies. Flies may infect you with typhoid fever, and other infectious diseases. After feasting on the discharges from natives and others suffering from infectious diseases, flies may go direct to your food or drink, to the lips of your sleeping child, or to a small open wound on your hands or face.

How to Get Rid of Flies.

Catch the flies as fast as they appear. Use liquid poisons, sticky fly-papers and traps.

Place the following fly poisons in shallow dishes or soup plates throughout the house:—Two teaspoonfuls of formaldehyde solution to a pint of water, sweetened with sugar.

Do not allow dirt to accumulate in corners, behind doors, on ledges, etc. Allow no decaying matter to accumulate near your house.

Ashbins and ashpits should be covered, and, after being emptied, should be sprinkled with a disinfectant.

Closets should be provided with top-hinged flaps, and with a self-closing cover for seat; also with fly door, and fly-netting guards to other openings. The contents of privies and of privy pails should be kept well covered with earth. Flies appear to be especially attracted to human excrement.

Manure should be removed frequently from the proximity of dwelling-houses, and at least once a week.

The great secret of getting rid of flies is cleanliness first, and by screening all openings of the home, especially to kitchen, dining-room and closets.

Flies in the home indicate a careless housekeeper.

Remember:—No dirt, no manure, no uncovered food, no flies!

By Order of

THE PUBLIC HEALTH COMMITTEE.

*Public Health Department,
Municipal Offices,
Johannesburg.*

ANNEXURE "B."

MUNICIPAL COUNCIL OF JOHANNESBURG.

DESTRUCTION AND PREVENTION OF MOSQUITOS.

I.—The life history of the mosquito or gnat is briefly as follows:—

The female deposits her eggs in water, without which they cannot hatch-out. The eggs hatch-out as worm-like larvæ or "wigglers," from which, after further changes, the adult insect develops. About 10 to 14 days elapse from the time the eggs are laid until the mosquito appears.

II.—Every locality breeds its own mosquitos. Under natural conditions, mosquitos cannot fly far. Few ever stray more than a quarter-mile from the pool in which they were bred.

III.—Destruction of mosquitos. The time at which it is easiest to destroy mosquitos is during the portion of their life (the larval stage) which they pass in water.

Mosquitos may be destroyed in various ways, namely:—

- (a) By stocking any large accumulation of water with small fish, which eat the larvæ or “wrigglers.”
- (b) By brushing out small puddles with a broom, the larvæ being killed by drying in the sun.
- (c) By coating the surface of collections of water in tanks, pools or elsewhere, with a thin film of oil. The oil prevents the larvæ rising to the surface to breathe, which quickly kills them. It is sufficient if this coating of oil is applied once a fortnight.

In the case of water tanks, this can be done by soaking in paraffin a rag fixed on a stick, and then painting the water therewith, enough oil being used to make a fairly permanent film. Olive oil mixed with a small proportion of turpentine has also been recommended for this purpose.

The easiest way to deal with a small open collection of water is to sprinkle the oil over the surface by one or two sweeps of a fine-rosed watering pot. The use of tar has also been found beneficial in such cases. When placed in water, tar constantly gives off a film like kerosene oil, but more permanent, and is said by some observers to destroy larvæ in a more efficient manner than oil does.

- (d) By fumigation with a mixture of nitre, charcoal and sulphur. This, especially if done during the heat of the day, will kill all mosquitos in a room. Fumigation, however, is useless, except as a very temporary measure, if active breeding-places are allowed to exist close by.

IV.—Prevention of Mosquitos.—See that no places are allowed in which mosquitos can breed. With this object:—

- (a) Prevent collections of water, either by draining or filling in depressions or low-lying land, taking care to leave no excavation where the earth has been removed for filling-in purposes. If

draining or filling in is impossible, trial may be made of hiding the surface of pools by close vegetation. In India the “Jalkunie”—a floating water-plant—has been most successful in this respect.

- (b) See that old tins, bottles, tubs or other receptacles in which water can lodge, are stored bottom upwards or removed from the premises and neighbourhood.
- (c) Protect by mosquito-proof roofing all means of access (*e.g.*, manholes, ventilating or overflow pipes) to rain-water tanks, septic tanks or other places in which water is stored about houses. This will prevent the female insect gaining access to the water and depositing her eggs therein.
- (d) Carefully straighten out any sagging of, or depressions in, the house-guttering, which may give lodgment to water in which mosquitos can breed.
- (e) Keep all guttering clear from mud, leaves, or other rubbish.

Note.—Mosquitos are delicate insects and require shelter from the heat of the sun.

Excessive vegetation, therefore, by affording cover, tends to protect them. For this reason the removal of brushwood and undergrowth has been found beneficial in districts where mosquitos are especially numerous.

V. Dragon flies are the natural enemies of the mosquito. Do not kill them.

VI.—Render houses mosquito-proof by means of wire blinds. The use of mosquito nets adds greatly to personal comfort.

By Order of

THE PUBLIC HEALTH COMMITTEE.

*Public Health Department,
Municipal Offices,
Johannesburg.*



APPENDIX C.

"The Duties, Qualifications and Difficulties of Sanitary Inspectors,"

BY CHARLES PORTER, M.D., M.O.H., JOHANNESBURG.

I have no doubt that you are all aware of, and have suffered from, the very general belief amongst not only members of the South African public, but amongst members of the Municipal Councils, and sometimes even members of Health Committees, that the principal, if not the sole, work of a Sanitary Inspector is to inquire and report as to the carrying out of the various public cleansing services; and as this work does not require any special technical training, the corollary of the belief in question has too often been that anyone of ordinary intelligence, whether or not a failure in other walks of life, is fully qualified to act as a Sanitary Inspector.

Whilst the detection and reporting of scavenging shortcomings are, undoubtedly, an important duty of the average Sanitary Inspector, especially where there are no special "Scavenging Overseers," it cannot be too widely known or too often said that it is but a single item in his numerous responsibilities, and that his duty also includes the following, amongst others, obligations:—

- (1) To make careful preliminary inquiry into cases of notifiable infectious disease; to visit frequently all premises in which infectious disease is known to exist; to make daily special inquiry as to the efficiency of the special sanitary services to typhoid cases; to superintend the removal to hospital of infectious cases; to carry out house-disinfection; and to assist upon occasions in special preventive measures, such as searching locations for plague or smallpox cases hidden by the wily Hindu or heathen Chinese.
- (2) To investigate promptly, report upon succinctly, and take the necessary action in regard to complaints of nuisances, etc.
- (3) To inspect licensed premises, such as butchers' and bakers' shops, tea rooms, Kaffir eating houses, offensive trade premises, etc.
- (4) To inspect and periodically to take samples of foods exposed for sale.
- (5) To inquire into and report in writing on all applications for trade licences, permits for natives, etc. This is a responsible, and, in Johannesburg, a very considerable work.
- (6) To note, report and often to advise, on insanitary dwellings, dangerous wells and excavations, buildings erected or altered in contravention of the By-laws, drainage nuisances, septic-tank installations, Vivian Poore drains, etc.
- (7) To ascertain, make appointments with, and to meet, property owners and agents, in order to explain the requirements of the Public Health Department.
- (8) To be familiar with the Public Health enactments and statutes in force within the district, to prepare and serve notices, prepare statements of evidence, drafts, summonses, indictments, etc.

In Johannesburg, moreover, three selected men have to carry out the very important duties of "mines sanitation" inspection—both on the surface and underground—work which demands special knowledge, experience and tact. The Municipal Council of Johannesburg, acting on the recommendation of the Medical Officer of Health, was, it is believed, the first authority in the world to recognise and meet this necessity as regards underground work, and Mr. Alexander Cowie, C.E., was the first inspector appointed, and has now two colleagues. In English coal and other mines, of which the writer has personal knowledge, no attempt whatever was at that time made to regulate

Inaugural Presidential Address, on 1st July, 1913, to Transvaal Branch of the Sanitary Inspectors' Association.

such matters as underground excrement disposal, general cleanliness and water supply. Indeed, one recalls such a mine in the North of England, employing 500 to 600 miners, from which the mine water was pumped into a reservoir for a town supply. As the result of Mr. Cowie's excellent work, the Johannesburg mines readily appointed white underground scavenging overseers, and a degree of betterment has been effected in the respects indicated, which can only be appreciated by those who knew the conditions ten years ago.

The importance and variety of the duties of a Sanitary Inspector are sufficiently obvious from the foregoing list, and in England received legal recognition as far back as 1891, when the London Public Health Act required that every Sanitary Inspector "shall be a person qualified and competent, by his knowledge and experience, to perform the duties of his office." As proof of such competence, the Local Government Board accepted "the Inspector of Nuisances Certificate," granted, after examination, by the Royal Sanitary Institute. This Certificate is now generally recognised throughout England, and so, to a lesser extent, are those granted by the Universities of Manchester and Liverpool, the Royal Institute of Public Health, and the Sanitary Inspector's Association. In London, however, the present statutory requirement is the Certificate of a Special Board for the examination of Sanitary Inspectors. In Scotland, examinations are held and Certificates granted by the Scottish Sanitary Association. In Dublin, the Corporation conducts its own examination. Outside the United Kingdom, the Certificate usually met with is that of the Royal Sanitary Institute, which holds its examination in various Colonies and Dominions, including South Africa. In this matter, the Transvaal will, in future, be well abreast of the times, for Section 190 of the Local Government Ordinance, 1912, provides that "after the first day of January, 1915, and except in special cases approved by the Administrator, no person shall be permanently appointed by any Local Authorities as Sanitary Inspector unless he be the holder of a Certificate of the Royal Sanitary Institute or a Certificate approved by the Administrator equivalent thereto, and he has by examination shown himself competent for such office." For this provision, the Province has to thank your Vice-President, Major L. Forsyth Allan, M.P.C., at whose suggestion the clause was inserted, and who himself holds the certificate in question.

The syllabus of subjects of the examination covers—the provisions of the Acts and Model By-laws relating to the duties of an Inspector; an accurate knowledge of the long legal list of varied specified conditions which constitute a public health nuisance; methods of inspection of dwellings, dairies and cowsheds, milkshops, markets, slaughterhouses, bakehouses, stables, and offensive trade premises; the physical characteristics of good water, and the causes and prevention of its pollution; the characteristics of good and bad food; methods of disinfection; the composition and causes of deterioration of pure air; the principal and simple methods of ventilation; the proper conditions of good drainage; and a knowledge of the general duties of a Sanitary Inspector's office.

In addition, no person is now admitted to this examination unless he can furnish evidence of opportunity of gaining a practical knowledge of sanitary work. This is a most important provision, as the examination is not a difficult one for any person of intelligence and fair elementary education, and there is no doubt that Certificates have in many cases in the past been granted upon a very superficial book knowledge without any practical training whatever. And here one would like to state, after nearly 23 years' daily experience of the work of Sanitary Inspectors, that, as a rule, to which there are some but not many notable exceptions, the best Inspectors are recruited from men with a thorough knowledge of one or more of the building trades. Apart from the actual value of such technical knowledge, one's experience is that such men usually possess a high degree of practical intelligence and adaptability. Personally, therefore, one would not hesitate for a moment to select, say, an expert plumber, even without a certificate, in preference to a certificated man with no such practical experience. And, in this connection, I would take the opportunity of calling attention to the regrettable fact that, although the requirements of the Johannesburg Public Health Department in this respect have been well known for the past ten years, it is practically impossible, although the salary of an Inspector varies from £25 to £30 a month, to get South African-born recruits who are qualified in the double sense already indicated, namely, by possessing (a) a thorough practical knowledge of one or more building trades; and (b) the Sanitary Inspector's Certificate. Other things being equal, preference would gladly be given in Johannesburg, and,

I believe, in other places, to such men, if they could be found; and the short-sighted indifference to the advantages of a good handicraft, whereby a moderate living and possibility of further advancement can be secured, must be a matter of surprise, regret and unwelcome ~~report~~ ^{support} to every good colonist and South African."

With regard to personal as distinguished from technical qualifications, I cannot do better than quote from "The Manual of Instructions for Sanitary Inspectors," issued by Colonel Gorgas, whose splendid work as Director of the Panama Canal Sanitation has made him famous, and has secured the most striking triumph of preventive medicine the world has seen. After pointing out that the Sanitary Inspector's duties involve not only considerations of "health, but also of the comfort and contentment of the people of his district," Colonel Gorgas exhorts his staff to exhibit "courtesy, moderation, tact and patience, which will enable them to carry out their duties with firmness, impartiality and justice to all, with the least friction and without incurrence of the ill-will of anyone." Probably this task is a much easier one in a disciplined community such as Colonel Gorgas controls than amongst the irresponsible crowd of all colours and nationalities in which the Witwatersrand rejoices. Colonel Gorgas also insists, as the writer has always done, on particular attention to the feelings and requests of medical men, who are, with very rare exceptions, cordial and powerful allies of the sanitary officer of every grade.

With regard to "The Difficulties of Sanitary Inspectors," these officials are very often between the Devil, in the form of the Health Committee and the Medical Officer of Health, and the Deep Sea, in the shape of the public. With respect to the Public Health Committee and the Medical Officer of Health, and apart from actual wrongdoing and obvious neglect, the Inspector is always open to the criticism that by doing too little he has failed in his duty, while by doing too much he has been indiscreet and over-zealous. It is often not easy to steer a safe course between Scylla and Charybdis. With regard to the public, a not uncommon complaint, often from persons angered by receipt of a notice or summons, is that they rarely, if ever, see the Inspector in his district. This is possibly quite true, but does not necessarily indicate neglect, as the Inspector is probably there during the very hours when such people are away at their offices or shops, and, in any case, does not waste time by announcing his presence unnecessarily when he is going his rounds. Neglect is also often alleged because from the top of a tram dirty yards are occasionally seen, even in respectable localities, and at practically any hour may be found in slum districts such, for example, as Ferreiras. The buildings in these slums are old, unsightly, primitive wood-and-iron or sun-dried brick structures in rows, or lining courtyards. Many of them are, as regards ventilation, of an unsatisfactory type, which, however, till recently, has been sanctioned by the By-laws in force in this country, viz., with a door and window on the same side, and with no facilities for perfilation. As has frequently been pointed out, however, it would be difficult, even if the Council had the legal power, to obtain a Closing Order in regard to many such individual houses; and one may here observe that proceedings instituted in November, 1912, to secure the closing of a certain block of insanitary dwellings have, so far, resulted in two appeals to the Supreme Court, the second of which is not yet decided.

This slum-like property swarms with low-class white and coloured people and their children; their habits are swinish in their filthiness, and yards and conveniences cleaned up under the personal direction of the Sanitary Inspector in the forenoon may be found strewn with filth in the afternoon. It is thus a matter of the greatest difficulty for the most conscientious Inspector to maintain even a semblance of continuous decency in such places, for, in practice, the condition of a previously cleaned yard is often not altogether incomparable after 24 hours' subsequent habitation with that of a kraal into which a number of animals have been driven and kept for a similar period. The question, too, of a prosecution in such cases may be one of great difficulty, for usually no evidence can be obtained as to the actual authors of the nuisance, and a By-law on English lines, making all the users-in-common responsible, has been declared *ultra vires* by one of our ablest and most respected magistrates. Further, and apart from the special difficulties of slum areas, the number of premises to be supervised by each Inspector in the urban portion of Johannesburg (and it is much the same elsewhere) varies from 1,308 with 92 licensed premises in the three townships of Denver, Malvern and Cleveland, to 2,600 with 126 licensed premises in the townships of Braamfontein, Parktown and Hillbrow; the ratio of Sanitary Inspectors to population being practically the same as in London. In London, however, the conditions of life are settled,

sewerage and water-carriage exist, there are no natives, nor, as a rule, Indians and half-castes requiring special supervision and permits, no Kaffir eating houses, and proportionately much fewer licensed premises to be regulated. Now, the writer has personally during the last 23 years done much house-to-house inspection, and has often, without wasting time, spent half an hour or more on one set of premises. Strange as it may seem to those who have not had this experience, he therefore considers that a fairly continuous record of 40 premises inspected per day is a very good one, but one which it may be utterly impossible to attain when an Inspector is frequently called off to attend to complaints, interview owners, serve notices, visit infected premises, and spend hours in Court waiting to give evidence. If, however, the average daily number of premises inspected and visited be taken at 50, with eleven full working days per fortnight, it will take the Inspector, say, in the case of District No. 7 (Doornfontein, etc.), more than three fortnights, or from six to seven weeks, to get through his district once, assuming that he devotes the greater portion of his time to nothing but house-to-house inspection. It is, therefore, clear that if Sanitary Inspectors are to be held responsible for the condition of every yard, when their complement is only sufficient to visit each premises rather less often than once in six weeks, their number must be enormously increased. But if in any community the refuse removal services are properly organised, supervised, and carried out by the particular officials entrusted with this particular work, there will be no need for a materially larger proportion of Inspectors than, say, in London. In any event, the writer believes that a righteous estimate of an Inspector's work can only be based on a personal knowledge of the official himself and of the district which he has to supervise.

In respect of his relations with the public, every Sanitary Officer has to be on his guard against attempts to use him for the gratification of spite arising out of some private difference. One recalls, for example, a quite unfounded complaint in reference to the food and cleanliness of the railway dining cars. A single question elicited the fact that the complainant was a discharged railway chef, and, in surprisingly candid reply to a second question, he admitted that he had made the complaint out of spite. A more frequent occurrence is an unfounded allegation against a landlord by a tenant who has failed to pay his rent in respect of the sanitary condition of the dwelling which the complainant has been forced to vacate. An Indian recently wailed about a competing compatriot's distinctly novel but unpleasant habit of "urinary expectoration," and from time to time other amusing conundrums have to be solved. Sanitary Inspectors are also occasionally accused of insolence, practically in every case by women. On inquiry, it usually turns out that the insolence consisted of serving a notice or pointing out and warning against contravention of the By-laws. One smiling and scented suburban Salome recently rustled in, apologised for coming by tram instead of in her motor car, and explained that she was a near relative of the Duke of Plaza Toro and of the Lord Archbishop of Titipu. In reply to a humble request for an explanation of the honour conferred by her presence, she demanded the instant production, in a charger, of the official head of an Inspector—whose attitude errs, if at all, on the side of placid gentleness—because he had dared to reprove her "boy" for sweeping domestic rubbish into the street, and, when she interfered, had told her that if it were repeated he would have to prosecute her. But this is merely an example of the minor trials and pinpricks which Sanitary Officers may expect from time to time. As a rule, to which there are no exceptions, it is well to refrain from any altercation with women, but quietly to note their utterances at the time in writing—a practice which has been observed to have a notable calming, or at any rate moderating, effect.

It is not, however, so easy to suffer gladly a form of insult which is offered with particular frequency in Johannesburg, especially (though not exclusively) by a comparatively small and mostly alien section. As regards dishonesty of method and calculated mendacity, Barabbas and Ananias are absolutely out of the running with the gentry referred to, and with certain persons of like kidney by whom they are occasionally defended in their contraventions of defiances of the Public Health Regulations. These individuals, many of whom hardly dared breathe the air of heaven freely in the country of their origin or parentage, sling about insinuations of personal spite, bribery, and other improper financial motives in reckless fashion (especially in the Courts), and upon occasion such a proceeding has been accorded literal impunity.

Perhaps the greatest difficulty in connection with Sanitary Inspectors' work in the Transvaal is the absence of any adequate Public Health Code. In 1902 a fairly comprehensive series of By-laws for Johannesburg was drafted, chiefly by the writer. This code was adopted by practically all the Municipali-

ties of the Transvaal, and did excellent service for some ten years. But about three years ago a succession of legal exceptions to the validity of the By-laws were successfully taken, notably in what is known as the "Stanton Case," and since that time Sanitary Authorities hardly know how they stand in the matter. Now, it is understood that Provincial Councils have power to deal with all questions affecting the good conduct of Municipal affairs, and of these affairs Public Health matters are certainly not the least important. Accordingly in 1912, the Transvaal Provincial Council, in its Local Government Ordinance of 1912, made a very earnest and promising attempt to deal with this difficulty. In view, however, of the fact that the Act of Union reserves Public Health matters to the Union Parliament, the validity of the Provincial Council's Ordinance is being constantly attacked, with the result that confusion has become worse confounded. From long experience, one is convinced, too, that government by By-laws is to be avoided wherever possible; and it is respectfully submitted that a well-considered and comprehensive Public Health Act, the validity of which cannot be assailed, is—as regards the Transvaal at any rate—a matter which merits the early attention of the Union Parliament. It is further submitted that such an Act (which need not be a very contentious one) should invest Sanitary Authorities with the same right of appeal against unsatisfactory magisterial decisions as is enjoyed in England. At present, in the Transvaal, the accused person has a full right of appeal; but, however absurd and unjust a magisterial decision may be (and such decisions are not unknown), a Sanitary Authority has no remedy whatever, except a request for revision by the Attorney-General, which he may or may not grant, and which will, in any event, not affect the issue of the case in question. At present there is obviously a distinct temptation to give a decision in favour of an accused person who has the right of appeal, and threatens to exercise it, as against a prosecutor who has no such right.

In any future Public Health Act, it is also to be hoped that the important question of "Town Planning" will not be overlooked, for it is useless to expect that the average landowner or township company will, in the absence of compulsion, accord anything like adequate recognition to the principles which modern Town Planning involves. For example, the Johannesburg Building By-laws are, as regards space requirements around new dwellings, at least equal to the most approved English codes. Nevertheless, by ingenious technical compliance with the By-laws, it has been possible to place as many as four cottages on a stand 100 feet by 50 feet. This "crowding on area" is a sure and certain means of creating future slums, and the problem of preventing it, which has only been seriously faced within the last few years, is not an easy one. In England, at present, the Local Government atmosphere is charged with "Town Planning." The Germans and Americans are also tackling the question, and in many cases have adopted what is known as the "Zonal System," whereby a Municipal area is divided into more or less concentric zones. The greater the distance of these zones from the centre of the town, the fewer is the number of dwellings allowed on any given area, such as an acre. In Johannesburg, as Mr. Burt Andrews, our esteemed Town Engineer, has remarked, such zones would not be concentric, but parallel to the Reef. If effort in this direction had been a matter of general knowledge say ten years ago, it would have been possible to prevent the discreditable conditions of "crowding on area" which exists, for example, at places in the Bezuidenhout Valley, Denver, etc. Such districts should be semi-rural in their nature, and, in the words of the Town Planning Act of 1909, should secure to residents "proper sanitary conditions, amenity and convenience in connection with the "laying out and use of the land." By "amenity" is meant reasonably pleasing conditions, and one would venture to add that the surroundings of each dwelling at a distance of three to four miles from the centre of Johannesburg should be such as, soil permitting, to admit of the innocuous disposal thereon of waste water, and even of a good deal of the domestic rubbish produced.

Gentlemen, one has now dealt with the various matters to which one proposes to refer to-night, and the impression has no doubt been conveyed that, like the policeman in the "Pirates of Penzance," taking one consideration with another, the Inspector's "lot is not a happy one." It is certainly not a bed of roses. On the other hand, its interest and utility cannot be questioned, and in South Africa, so far as one knows, fixity of tenure is reasonably good. Indeed, in 13 years one has only heard of one case in South Africa, as compared to many reported in England, in which an Inspector appears to have been "fired" merely because he did his duty too well. Employment as a Sanitary Inspector is continuous, hours of work are regular, and the pay is

usually sufficient to live comfortably and, by reasonable care, to provide something for a rainy day, which is more than some of your *confrères* oversea can at present hope for. Our corrected "Death-rate from All Causes Amongst "Whites" is about 11 to 12 per 1,000, and our Infantile Mortality-rate 100-110 per 1,000 births. We work in a singularly attractive land with a glorious climate, and those of us who belong to the Reef are citizens of no mean city, where everything is in the making, and our daily efforts may perhaps in a humble way help to mark its advance to the realisation of its destiny—healthy, contented, prosperous and distinguished, as, despite passing clouds, we hope it may be. It is true that this sentiment will "butter no parsnips," but, to some at anyrate, it is a legitimate source of comfort, encouragement and inspiration.

I thank you for your attention, and wish the members of the Transvaal Branch of the Sanitary Inspectors' Association, individually and collectively, every success they desire and deserve.

Report on the Health of the Natives Employed by the Council for the period 1st July, 1912, to 30th June, 1913.

The average number of natives employed by the Council, as computed from the returns received from the various Departments, is set forth in the subjoined table:—

Department.				No. of Natives.
Sanitary	...	...	..	1,904
Town Engineer	..	..	...	994
Light and Power..	...	...	...	620
Tramways	...	...	...	316
Water	...	...	...	146
Other Departments	...	...	...	71
TOTAL				4,051

The total number of admissions to hospital was 385, and the total deaths 24. The admissions represent an annual ratio of 94·9 on the average number employed.

The uncorrected annual death-rate per 1,000, calculated on the average number employed, was 5·9.

The admission and mortality-rates since records were first kept in 1904 are shown below:—

ADMISSION AND MORTALITY-RATES.

Year.	Admissions.		Mortality.	
	Total.	Ratio per 1,000.	Deaths.	Rate per 1,000. All Causes.
1904-5	430	86·8	48	9·6
1905-6	511	112·6	41	9·0
1906-7	555	117·2	66	11·8
1907-8	572	163·6	44	12·8
1908-9	376	118·6	19	5·9
1909-10	294	90·7	18	5·5
1910-11	458	122·6	30	8·03
1911-12	506	131·7	23	5·9
1912-13	385	94·9	24	5·9

It is satisfactory to note that the death-rate is one of the most favourable yet recorded.

Summary of Cases Admitted into the Native Hospital, 1st July, 1912, to 30th June, 1913.

No. in International Classification.	DISEASE.	COMPOUNDS FROM WHICH ADMITTED.										RESULT.				TOTALS.			
		Main Com-pound.	Van Beek St.	Norwood.	Bezuidenhout Valley.	Smit Street.		Burgersdorp Destructor.	Natal Spruit Destructor.	Water Dept.	Tramways.	Light and Power.	Volhuter.	Springfield.	Cured or Relieved.		Transferred to other Hospitals.	Discharged Unfit or to Conalesce at Home.	Died.
						T.E.	M.S.D												
1	Enteric Fever	5	8	1	2	1	...	...	...	2	2	2	1	1	14	...	8	3	25
4	Malaria	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...
6	Measles	2	1	...	...	...	2	...	...	...	...	...	...	...	2	3	...	...	5
7	Scarlet Fever	...	...	...	...	...	1	...	...	...	1	...	...	...	2	...	...	...	2
10	Influenza	18	8	...	...	13	5	...	2	4	3	3	3	1	59	...	1	...	60
14	Dysentery	...	1	...	...	1	...	...	...	...	...	...	...	...	1	...	...	1	2
18	Erysipelas	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1
19a	Mumps	...	3	...	...	...	1	...	...	...	...	...	...	...	...	5	...	...	5
19b	Chickenpox	1	1	...	...	...	1	...	...	...	...	...	...	...	2	2	...	...	4
28	Tuberculosis of Lung	3	1	...	...	3	2	...	...	...	...	...	...	...	2	6	...	...	7
34	Other Tubercular Diseases	1	1	...	...	2	...	...	2	...	4	...	...	...	2	...	3	1	6
37	Syphilis	3	...	...	...	1	...	...	1	...	...	...	...	...	...	3	2	...	10
38	Gonorrhoea	1	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	3
47-48	Rheumatism	3	3	...	...	1	2	...	1	...	3	2	...	2	17	...	...	...	17
49	Scurvy	...	1	...	...	...	...	...	1	...	...	...	...	...	2	...	...	...	2
61	C. S. Meningitis	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1
73-74	Diseases of Nervous System	1	...	...	...	1	...	...	...	...	...	...	...	...	...	1	1	...	2
75	Diseases of Eye	...	...	...	...	4	2	...	...	...	...	...	...	...	1	...	...	...	1
89	Bronchitis	3	3	...	...	...	...	...	...	...	...	...	1	...	12	...	...	1	13
92	Pneumonia	15	14	1	1	11	4	1	3	5	7	10	...	4	51	...	15	10	76
93	Pleurisy	2	1	...	...	...	...	...	...	...	...	...	...	...	2	...	1	...	3
99a	Gingivitis	2	...	...	...	1	...	...	...	...	...	1	...	...	4	...	...	...	4
100	Tonsillitis	2	6	...	1	1	2	...	...	...	1	3	1	1	18	...	...	...	18
103	Gastritis and Other Disorders of Digestion	8	4	...	...	10	11	...	1	3	3	2	2	2	44	...	2	...	46
105	Diarrhoea	1	...	...	...	...	...	...	...	...	...	...	...	1	2	...	...	...	2
110	Diseases of the Intestines	...	1	...	...	1	...	...	...	...	...	...	...	...	1	...	...	1	2
119	Nephritis	...	...	...	...	...	...	...	...	...	2	...	...	...	1	...	...	...	2
144	Inflammation of Connective Tissues	1	...	...	...	1	...	...	...	...	...	1	...	...	3	...	...	...	3
144	Abscesses	2	2	...	...	1	...	...	...	...	...	...	...	...	4	...	...	1	5
145	Diseases of Skin	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1
166-186	Injuries and Burns	7	2	...	3	11	1	1	3	...	3	1	1	...	32	...	1	...	33
189	Ill-defined and Minor Ailments	1	2	...	...	4	...	...	...	...	...	...	1	...	7	...	...	...	7
189a	Debility	1	...	...	...	...	...	...	...	...	...	...	1	...	1	...	1	...	2
	All other causes	6	1	...	...	2	3	...	...	...	1	1	...	1	13	...	1	1	15
	Totals	90	66	2	7	70	39	2	14	15	30	28	9	13	300	20	41	24	385

CHIEF CAUSES OF DEATH.

The chief causes of death are set out in the following table:—

Disease.	1904 5	1905-6	1906-7	1907-8	1908 9	1909-10	1910 11	1911 12	1912 13
Pneumonia ...	12	20	22	8	5	5	15	11	10
Enteric Fever...	21	6	29	12	3	3	5	6	3
Injuries ...	—	4	1	9	4	2	1	1	—
Tubercle of Lung and other parts	4	2	—	6	5	2	1	1	5
Dysentery ...	—	3	5	5	—	2	—	—	1
All other causes	6	6	9	4	2	4	8	4	5
TOTALS ...	43	41	66	44	19	18	30	23	24

Pneumonia, influenza and various disorders of digestion have been responsible for the greatest number of admissions, and pneumonia and tuberculosis for the largest number of deaths. Minor ailments and injuries have, as in former years, been treated at the Dispensary, the more serious cases being admitted into the Compound Hospital. The reason for their admission and their disposal are shown in the table inset opposite this page.

I. GENERAL DISEASES.

Enteric Fever.

Subjoined are the statistical particulars of this disease:—

Year.	Admissions.	Deaths.	Case-Mortality per cent.	Mortality per 1,000.
1906 7	82	29	35.4	6.1
1907-8	50	12	24	3.4
1908-9	24	3	12.5	.9
1909-10	17	3	17.6	.9
1910-11	24	5	20.8	1.3
1911-12	77	6	7.7	1.5
1912-13	25	3	12	.7

There has been a marked decrease in this disease, due no doubt to the improved sanitary conditions. The greatest number of cases occurred amongst the Scavenging natives, who, as pointed out in previous reports, are always more or less exposed to an "occupational" risk.

Tubercular Disease.

Thirteen admissions and 5 deaths occurred during the period under review. Of these, 7 were due to tubercle of the lungs, the remainder to tubercle of other parts of the body. Tuberculosis is apparently on the increase, and the report of the Tuberculosis Commission, now sitting, is being awaited with interest.

II. LOCAL DISEASES.

Diseases of the Respiratory System.

There were 92 admissions and 11 deaths. The admissions include—Bronchitis, 13; pneumonia, 76; and pleurisy, 3. The deaths, with the exception of one due to bronchitis, were all caused by pneumonia.

Pneumonia.

Pneumonia still accounts for the largest number of deaths. During 1912-13 nearly half the total mortality was due to this disease.

In the subjoined table are set forth the admissions and deaths per thousand during the past nine years:—

Year.	Admissions per 1,000.	Mortality per 1,000.		Percentage of Total Mortality.
		Amongst Municipal Natives.	Amongst Natives in Town as a whole.	
1904 5	10·5	3·4	7·5	35·4
1905 6	14·1	4·4	8·8	48·8
1906·7	10·9	4·6	6·6	39
1907·8	14·9	2·2	9·3	17·1
1908 9	8·2	1·5	9·6	25·4
1909-10	12·3	1·5	6·8	27·2
1910-11	21·4	4·0	11·0	49·8
1911-12	19·5	2·8	18·6	47·8
1912 13	18·7	2·4	11·36	40

III. MINOR AILMENTS.

There were the usual number of minor cases treated at the Dispensary, none of which call for special remark.

IV. GENERAL AND SANITARY CIRCUMSTANCES.

Considerable sanitary improvements have been effected in several of the Compounds, notably at Van Beek Street, by the installation of the water-carriage system of drainage. To this, no doubt, may be attributed the big reduction in admissions for enteric fever. Much, doubtless, remains to be done, the Smit Street and Main Compounds being the most unsatisfactory. The provision of proper buildings for the Native Hospital should not be delayed much longer, but it is hoped that, if the scheme for the new Compound in Newtown is carried out, the necessary arrangements will be made.

V. DIET OF MUNICIPAL NATIVES.

This matter has been reported upon as follows:—

6th January, 1914.

*The Medical Officer of Health,
Johannesburg.*

In accordance with the instructions of the Public Health Committee, the following report is submitted on the diet of the natives employed by the Council:—

From inquiries addressed to the different Departments, it would appear that the ration scale at present in force varies slightly, but is approximately, per head, as follows:—

Mealie Meal	...	...	...	2 lbs. per diem.
Fresh Meat	...	...	...	2 lbs. per week.
Fresh Vegetables	...	...	...	1 lb. per week.
Salt	...	...	...	1·5th oz. per diem.

The Town Engineer's natives, working from the Smit Street Depôt, however, consume an extra $\frac{1}{4}$ lb. of mealie meal a day, and the Scavenging natives, working at night, receive a hot ration of coffee, while a few boys employed with the motor trollies from Norwood are given $\frac{1}{2}$ lb. loaf of bread each day in addition to the general ration.

The physiological and calorific equivalents of the above diet—assuming that the quantities given are actually consumed—are shown in the subjoined table, in which the rations have been averaged as if a daily issue:—

Article.			Amount (ounces).	Protein (ounces).	Fat (ounces).	Carbo-hydrate (ounces).	Calories.
Mealie Meal *	...	...	32	3·2	1·36	22·96	3,360
Meat	...	...	4·5	·9	·15	—	124
Vegetables	...	...	2·2	·02	—	·28	36
Salt (about)	...	...	·2	—	—	—	—
Totals	...	...	38·9	4·12	1·51	23·24	3,520

With an additional $\frac{1}{4}$ lb. of mealie meal, the figures would be as follows:—

—			Amount (ounces).	Protein (ounces).	Fat (ounces).	Carbo-hydrate (ounces).	Calories.
—			42·7	4·52	1·69	26·1	3,940

Here it may be well to explain briefly the terms used in the above table:—

Protein.—Proteins are amorphous, non-crystallizable bodies which resemble each other in being composed in similar weight proportions of carbon, hydrogen, oxygen, nitrogen and sulphur, with occasionally a little phosphorus. They are the most important foodstuffs, as they are the only organic food substances of which it can be said with certainty that they are indispensable, and cannot be replaced by any other nutrient material.

Carbo-hydrate.—Carbo-hydrates are solid substances, chemically indifferent and without odour. They have either a sweet taste (sugars) or can be readily changed into sugars by the action of dilute acids.

Calories.—By the term “calorie” is meant the amount of heat required to raise one pound of water 4° F. The calorific equivalents have been given in the above table because it has been found that, as a measure of the utility of food, the value of the various food principles as mechanical power producers will correspond with their value as heat producers.

Under the Native Labour Regulations Act and Regulations, 1911—which apparently applies to all natives employed in mines and works—“works” including any works owned or controlled by the Department of Railways and Harbours—the following minimum ration scale for native labourers is laid down:—

MINIMUM RATION SCALE FOR NATIVE LABOURERS.

Article.				Minimum Allowance.
Mealie Meal (1)	...	...	...	20 ozs. per day.
Bread (2)	...	...	...	8 ozs. per day.
Beans (Dried) (3)	...	...	...	4 ozs. per day.
Salt	...	...	...	$\frac{1}{2}$ oz. per day.
Meat	...	...	...	3 lbs. per week.
Pea Nuts (4)	...	...	...	22 ozs. per week.
Treacle (Molasses, Golden Syrup) (5)	...	...	...	1 lb. per week.
Fresh Vegetables (6)	...	...	...	2½ lbs. per week.

* The mealie meal equivalents—on the assumption that the meal supplied is South African grown—have been worked out from figures kindly furnished by Dr. McCrae (Government Analyst).

Native Diet,
1912-13.

- (1) Exclusive of the mealie meal used in preparing Marewu, the making of which should not be restricted.
- (2) To be issued on each working day to all underground natives, and to those surface natives who do not have access to the kitchen on midday.
- (3) Must be properly cooked.
- (4) May be replaced by a weekly allowance of 7 ozs. of animal or vegetable fat (of good condition, and served in a form palatable to natives), plus 22 ozs. of dried beans.
- (5) May be replaced by sugar.
- (6) May be replaced by fresh or dried fruits.

The physiological and calorific equivalents of this scale are :—

Article.	Amount (ounces).	Protein (ounces).	Fat (ounces).	Carbo-hydrate (ounces).	Calories.
Mealie Meal	20	2'0	'85	14'35	2,100
Bread	8	'64	'12	4'0	570
Beans	4	'96	'05	2'27	389
Salt	'5	—	—	—	—
Meat	6'85	1'37	'23	—	213
Pea Nuts	3'14	'78	1'25	'78	520
Treacle	2'2	—	—	1'54	185
Fresh Vegetables ...	5'7	'07	'01	'04	97
Totals	50'39	5'82	2'51	22'98	4,074

Comparing the Municipal ration with the minimum scale prescribed under the Regulations, it will be seen that the former is deficient, not only in amount—which in itself is not of supreme importance—but also in protein, fat and salt, while the calorific equivalent falls far short of that laid down. There is practically no variety in the Municipal ration, which depends almost entirely for its available source of energy on the large amount of carbo-hydrate. As to how far these deficiencies may be detrimental, either to the health or physical energy of the natives, is a matter for consideration. Their health does not appear to have suffered unduly during the period 1904-1912, if judged by personal observation and the mortality figures, which are as follows :—

ANNUAL DEATH-RATE PER 1,000 AMONGST NATIVES.

(Uncorrected for age and sex distribution.)

Year.	Employed by the Council.	Black Labourers on the Mines. (From disease only.)
1904-5	9'6	—
1905-6	9'0	—
1906-7	11'8	28'3
1907-8	12'8	26'7
1908-9	5'9	28'9
1909-10	5'5	27'2
1910-11	8'03	—
1911-12	5'9	—

Scurvy has been almost unknown, but it will be well to bear in mind the ^{Native Diet.} opinion held by many—that it has been customary for the Municipal native ^{1912-13.} to supplement his rations either by his own exertions as a scavenger or by recourse to the many shops which abound for the purpose. It is, however, understood that during 1913 the Acting Assistant Medical Officer of Health noticed several cases of the disease.

The question of physical energy is a most difficult one to determine accurately, and, in the absence of special tests and observations, comes down to a matter of individual opinion. Physical energy can no doubt be most economically furnished to man by a diet of carbo-hydrates and fats, but, so far as the upkeep of the organism is concerned, this is dependent upon an adequate supply of protein in the food. Various standards have been suggested as to what is a minimum diet to maintain health in persons doing hard work, but, for the purpose of this report, it is taken that the minimum diet as prescribed by the Regulations must be accepted.

From this standard the Municipal ration falls short in protein from 1·7 to 1·3 ozs.; in fat, from 1 to ·82 ozs.; and in salt about ·3 ozs. These deficiencies can probably be best and sufficiently made up by the supply of $\frac{1}{2}$ lb. of bread, 2 ozs. of beans and ·3 ozs. of salt per day, and 1 lb. of meat per week. The beans should be served in cotton-seed oil, and the amount of mealie meal might be reduced to 28 ozs. per diem. Great care, however, must be exercised in selecting the mealie meal, which should be supplied in the form in which a certain amount of “germ” and “husk” remain. It must not be of too fine a quality and never “kiln-dried.”

The coffee ration—whilst most valuable as a hot drink—has practically no nutrient value, and the issue of cocoa instead would be a great improvement. It is also desirable that the preparation of Marewu, under the Compound Manager's supervision, should not be restricted.

If the above additional articles of diet are supplied, the time of issue and method of cooking should be arranged with the Managers of the Compounds from which the natives work. Whether the issue is made in the form of soup, stew, etc., must largely be a matter of convenience, but the advantage of varying same and rendering the ration as palatable as possible, either by the occasional use of curry powder or other condiments, should not be overlooked.

The ration such as suggested will have the approximate values set out below:—

Article.	Amount (ounces).	Protein (ounces).	Fat (ounces).	Carbo-hydrate (ounces).	Calories.
Mealie Meal... ..	28	2·8	1·19	20·09	2,940
Bread	8	·64	·12	4·0	570
Meat	6·85	1·37	·23	—	213
Beans	2	·48	·02	1·13	194
Fresh Vegetables ...	2·2	·02	—	·28	36
Salt	·5	—	—	—	—
Totals	47·55	5·31	1·56	25·5	3,953

Fat is still wanting, but the addition of cotton-seed oil in the preparation of the beans, and the use of “slab” cocoa, which contains as much as 40 per cent. fat, will supply the deficiency, and make up a satisfactory minimum ration.

If cases of scurvy persist, however, it may be found desirable to increase the amount of fresh vegetables to the 2½ lbs. laid down, but their nutritive value is slight, and their worth lies practically in their anti-scorbutic properties. If used, however, they should be minced in the soup, as the native is not partial to green vegetables, and is apt to discard them untasted.

Native Diet,
1912-13.

References have previously been made to the question of diet in the Annual Reports on the Health of the Natives. In view, however, of the Committee's instructions, and cases of scurvy having been discovered during 1913 by the Acting Assistant Medical Officer of Health, the reconsideration of the Ration Scale should be no longer delayed. The deficiencies in the present diet have been sufficiently indicated in the foregoing report, and

IT IS NOW RECOMMENDED:—

- (1) That the present Ration Scale be increased by the issue each day of (a) 8 ozs. of bread, (b) 2 ozs. of beans, (c) 0·3 ozs. of salt; each week of (d) 16 ozs. of meat.
- (2) That the time and method of cooking, etc., be arranged with the various Compound Managers, and that the advantages of varying the form of issue, which should be as palatable as possible, be not lost sight of.
- (3) That a hot ration of some form of unrefined cocoa be issued instead of coffee.
- (4) That the preparation of Marewu, under the Compound Manager's supervision, be unrestricted.
- (5) That the beans be served in cotton-seed oil.
- (6) That the mealie meal be reduced to 28 ozs. a day, and be of the quality indicated in the report.

P. G. STOCK, M.B., Ch.B., D.P.H.,
*Assistant Medical Officer of Health, and Medical
Attendant to Natives, &c.*

6th January, 1914.



